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Railway Age Gazette

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Railroads Carelessly Burdened

In the State of Colorado, in an accident such as the injury of a tramp, struck by a train, or when a careless trackman gets in the way of a locomotive and has his arm broken, it is the duty of the conductor of the train to telegraph at once to the capitol, at Denver, giving the details of the accident and its cause. This is required by an order issued on August 18 by the Public Utilities Commission of the state. The order requires telegraphic reports of substantially all train accidents in which men are hurt, and all cases of injury of persons by moving trains, and may be considered the response of this commission to the recent request of the railways throughout the country that during the present stress they be relieved of the burden of making unnecessary reports. The makers of this order, however, have not only ignored this reasonable request of the railways; they have disregarded the lessons of experience. The office of the Interstate Commerce Commission could show a tremendous volume of unnecessary telegrams of this nature, and with a much more reasonable classification—that is, with a somewhat rational rule for the exclusion of the less important accidents. Not that any accident is not a proper subject of investigation; all useful investigation is to be encouraged; but to insist on such excessive promptness where 95 to 99 per cent of the telegrams will do no good, can only be classed as childish. But for the evidence of the formal order, with the names of three commissioners attached to it, one might suspect that the document had been prepared by the newest clerk, brother to that superintendent's clerk who ordered, in the name of his boss, that all cars on side tracks should be moved, occasionally, so as to prevent flat wheels.

Railroad Stocks Now and in July, 1914

Nearly every one will concede that the prices of all stocks on the New York Stock Exchange on July 30, 1914, the day before the Exchange was closed, reflected the desire or necessity of investors and speculators to convert securities into cash rather than any calm judgment of the intrinsic values which lay back of the securities. On the other hand, the present prices of railroad stocks reflect the judgment of the investing and speculating public as to the intrinsic values in the future. Industrial stocks may reflect fear of a tax on excess profits, price-fixing, etc., but railroad stocks can reflect such fears only to a limited degree. The railways have already had their regulation. Notwithstanding this, notwithstanding the prosperity that was made so much of by the Interstate Commerce Commission when refusing to grant increases in rates, notwithstanding the present large earnings, Atchison, Topeka & Santa Fe common stock is selling at almost the same price today as on the panic day of July 30, 1914, when the Stock Exchange had to close. Notwithstanding the tremendous industrial activity of the country, Pennsylvania common stock is selling at about 104 per hundred dollars par value as compared with 105⅛, the price on July 30, 1914. Some of the presidents of the richer roads admitted on the witness stand that their roads were not themselves in need of higher rates although their neighbors were, apparently. The Stock Exchange disagrees with them. Chicago & North Western, one of the gilt-edged stocks, is selling at about 107 compared with 126 on July 30, 1914; Great Northern is selling at 104 as compared with 114 on July 30, 1914; Lehigh Valley is selling at the same price as on July 30, 1914; Louisville & Nashville is selling at 123 as compared with 127. There are, of course, railroad stocks that are selling much higher today than they were in July, 1914. Norfolk & Western is selling 20 points higher, and Union Pacific over 20 points higher, but the fact which deserves most serious consideration is that such stocks as Pennsylvania and Atchison are selling now at panic prices. The market may be wrong. The prices made on the Stock Exchange are the consensus of guesses as to future values, but in the long run they have proved accurate guesses and guesses that were founded on a more profound understanding of general conditions even than the Interstate Commerce Commission brought to bear on the rate case.

Go Slow in Hiring Women Workers

Before deciding to employ women more extensively in railway service great care should be taken to determine those classes of work on which they can be used to the best advantages. It may prove a serious mistake to rush in and hire them without thoroughly studying the situation in all its aspects. Railroads, as other industries, have not infrequently lowered their efficiency and lost money by adopting fads. This has been true not alone of small and comparatively unimportant details,

but of larger factors, such, for instance, as forms of organization, types of locomotives, inadequate car construction, station design, etc. There are many clerical positions on railroads now filled by boys or men that can, without question, be acceptably filled by girls or women, thus releasing the men for more active work for which they are better fitted. To secure real efficiency, however, the women must be carefully instructed and coached for the work; this in most cases will require a larger amount of supervision than is ordinarily provided, at least during the period that the change is being made. When it comes to the heavier and rougher work the roads should go slowly. Under no circumstances should women be employed for work in the shops, or where men only were previously employed, until special facilities have been provided for their comfort and convenience. As far as possible they should be segregated from the men, and arrangements should be made so that they will naturally find it convenient to lunch in a group by themselves. Capable women should be provided to maintain the rest rooms and look after the women. They should have their own first aid experts. If practicable, a forewomen should have charge of each group of women workers. Unless these things can be done and adequate facilities be provided to insure getting real efficiency from the women, it will be better to get along without them. "Fads and Their Cost" was the subject of a paper read before the New York Railroad Club many years ago. It is vitally important that both energy and money be conserved at this time, and that luxuries in the line of fads and fancies be rigidly guarded against.

Where to Keep the Bond

"Sure, I'd buy a bond quick, but where will I keep the thing when I get it." That, they tell us, lost more subscriptions for Liberty Bonds than almost any other single argument; and those who had charge of recruiting subscribers have scratched their heads over the problem of how to answer it ever since. But, it will not come up when the next issue of the Liberty Loan is floated in one place, and that is on the Pennsylvania Railroad. That company has recently announced to its employees that it will make arrangements to take care of the bonds for its employees free of charge. The treasurer has been authorized by the board of directors to take over for safekeeping the bonds of any employees who may request it. The interest on the bonds will be collected as it falls due on June 15 and December 15 each year and will be added to the payrolls for the last half of the months of June and December respectively. This will solve a vexatious problem for those who will be called upon to sell Liberty Bonds in the future and also for employee subscribers. The Pennsylvania, presumably, is not the only road that has offered to hold the bonds for its employees in this wise. There is no doubt, however, that those railroads that have announced such plans are performing a national service quite in keeping with the many other things they are doing in the present crisis.

REGULATION IN AID OF THE ENEMY

THE transportation system was the first element in our national economy to recognize the heavy responsibilities which the war placed upon the country and to take prompt and united action to meet the emergency. In view of the energetic and patriotic manner in which the railroads have discharged their duty and the close relation between their efficiency and military effectiveness, it would not be unreasonable to expect that the hostile attitude of governmental agencies would cease in large measure until the conclusion of the war. Recent reports from Texas, however, indicate that public bodies are still pursuing the short-sighted and habitual policy of harrassing common carriers.

At the instance of the Brotherhood of Railway Trainmen the city commission of Fort Worth, Tex., passed an ordinance compelling the railroads to use a crew of four men on trains in switching service and to have the air hose coupled up on all switching trains of five or more cars which are moved over grade crossings. The provisions of the ordinance stipulate that the extra switchman must be stationed at the end of each switch train to warn persons who may be on or approaching a crossing and that the air hose must be coupled up so that a train may be brought to a stop more quickly. Apparently the measure is intended as a safety regulation, but its framers do not seem to comprehend the obvious unfairness of placing all responsibility for keeping crossings clear on the railroads and none on the public. The portion of the ordinance relating to the use of air brakes is especially vicious in that it would greatly impede switching in a city where 40,000 soldiers are now assembled in the face of the specific demands of the government that all military traffic be handled promptly and expeditiously in time of war. Any one with the slightest appreciation of transportation problems will appreciate that the addition of 40,000 men to the population of a city in itself would strain to the utmost the yard facilities serving that point. Under the guise of protecting citizens from injury, and incidentally of providing additional jobs for switchmen, the city commission would add to the difficulties of the carriers and make railroad efficiency in a time of need impossible.

Fortunately, a judiciary farther removed from political influence than the commission has granted the railroads a temporary injunction which prevents the enforcement of the ordinance pending the outcome of a suit for a permanent injunction set for trial in January. The action of the city commission of Ft. Worth and the wire-pulling of the B. of R. T. which prompted it are acts fully as reprehensible as those which have gained wide publicity as calculated to impede the prosecution of the war and thereby assist the enemies of the United States. It is to be hoped that the public will soon see these anti-American activities in their true light, and deal as they deserve with public officers who by placing politics above national welfare give aid and comfort to the national enemy.

A VICE-PRESIDENT IN CHARGE OF THE MECHANICAL DEPARTMENT

A PECULIAR significance attaches to the appointment of W. D. Robb as vice-president of the Grand Trunk in charge of motive power, car equipment and machinery. The trying times through which our railways are passing are demonstrating beyond question the importance of the equipment and maintenance problems. It is necessary on most roads that the head of the mechanical department be given greater authority and facilities in order properly to administer the work of that department. No one understands better than the mechanical superintendent the tremendous losses that the railroads of this country have suffered in past years by the policy of changing the mechanical department appropriations and forces with every fluctuation in earnings, and without regard to the condition of the equipment. This same policy has had much to do with the inadequate supervision in the mechanical department on many roads and the lack of preparedness on the part of that department in providing plans and specifications for new equipment. Indeed, instances are not unknown of managements ordering equipment without consulting the heads of the mechanical department. These things have discouraged not a few of the most promising mechanical department men in the past and they have been lost to the railways because of the wider opportunities and better conditions which they have found in the industrial field. The railways could ill afford to lose them and in many cases have indirectly continued to pay part, or all of their salaries in the buying of equipment. Surely the railroad companies could afford to pay competent mechanical department officers as well or better than manufacturing companies which make a business of supplying one, or at the best, a

few of the specialties required by the mechanical department.

In England the locomotive superintendents deal largely directly with the boards of directors and their authority is said to be beyond the reach of the stockholders when questions of safety and proper working condition of equipment are concerned. Chairman Smithers of the Grand Trunk is an Englishman; he has been spending several months in Canada studying railway conditions and quite possibly it may have been at his suggestion that the new vice-presidency was created. Mr. Robb's record as superintendent of motive power is such as to insure his success in handling the larger and broader responsibilities in the new position and the development will undoubtedly be followed with closest interest by American railroads generally. The tendency toward a larger recognition of the importance of the mechanical department is reflected to a certain extent in this country by the promotion last winter of D. F. Crawford to the general managership of the Pennsylvania Lines West and also by the promotion last week of George W. Wildin to the general managership of the New York, New Haven & Hartford.

SHALL THE GOVERNMENT MAKE A LOAN TO THE RAILWAYS?

NATHAN L. AMSTER, president of the Investors' Protective League of America, has issued a statement advocating a loan by the government to the railroads of $300,000,000 or $400,000,000 out of the receipts from the next issue of Liberty bonds to bear interest at 4 per cent. Mr. Amster says that the most critical and urgent problem facing the railroads is that of financing extensions and improvements and caring for maturing obligations during the war. They cannot, he declares, sell long term bonds in competition with the United States Government, which is issuing billions of dollars of tax-exempt bonds at high interest rates; yet they are called upon to render more and better service than ever. The making of such a loan, contends Mr. Amster, is "an essential war need. Furthermore, such action would tend toward emancipating the railroads from the unhealthy domination of certain Wall street powers."

There are many people, including some railway officers, who contend that as the government is fixing the maximum return which, on the average, railways are permitted to earn, it ought also to guarantee them a minimum return. Mr. Amster's proposition goes somewhat farther than this and contemplates not merely a guarantee to the railways, but a loan.

Government financial aid to the carriers when their financial situation is so largely attributable to regulation seems logical. If the government is going to persist in the policy of so restricting net returns as to render it impracticable for the companies to compete successfully for the capital which they require, doubtless the time will come when it will have to give many of them aid in the form of subsidies, guarantees or loans to prevent the arresting of their development from causing general industrial and commercial stagnation.

The *Railway Age Gazette* does not believe, however, that government aid at present is desirable. Mr. Amster refers not only to regulation as one of the causes of the present situation of the railways, but also to the "unhealthy domination of certain Wall street money powers" as another cause. If these are the causes why not attempt to remedy the situation by removing them? The adoption of the reforms in our system of regulation which the railways have been urging upon the Newlands committee would cause regulation to cease to be unduly restrictive and burdensome. The adoption of one of the proposed measures, that is, the giving to the Interstate Commerce Commission of reasonable authority to regulate the issuance of railway securities, would largely solve the problem of Wall street domination by rendering the abuse of the power of the banking interests difficult, if not impossible.

The money which does a man the most good is that which he earns himself. In fact, it may perhaps be said with truth that in the cases of 99 men out of 100 the only money which ever did them any real good after they became men was that they earned themselves. The same general principle applies to railroads. In the long run we will not have efficiently and economically managed railways unless we give them an opportunity to earn reasonable profits and then let them go bankrupt, if they do not do it. The benefits that might be derived from direct government aid, whether in the form of guarantees, loans or subsidies, would be but temporary, while the injury done by them would be permanent. If a government loan were made to the railways to enable them to refund maturing obligations, the time would come when there would have to be another refunding of obligations. Would the railways be in any better position to refund them later on a satisfactory basis? Not unless they were regulated meantime in a less drastic manner than they are being now. But the very fact that the government had made them a loan would be used effectively as an argument for not regulating them any less drastically. Meantime, it is questionable if the railways, having already received advances from the government, and probably living in the expectation of having them renewed or of receiving others, would be operated as efficiently as they would be if their managers knew that they must operate them efficiently or take the consequences.

The railways of the world have had a large amount of experience with government guarantees and loans. With a few exceptions the governments have had to pay part or all of the interest which they have guaranteed or to forego part or all of the interest on the loans which they have made. The result usually, in cases where public aid has been given, has been that government concern about and interference with the management of the railways have grown until finally the railways have passed into the hands of the government as its property. This is what is occurring now under our eyes in the case of the Canadian Northern in Canada. The government guaranteed interest on the road's bonds; had to make advances in payment of part of the interest, and now a measure is being considered, and probably will be adopted by Parliament for government ownership and operation of the Canadian Northern. This is the way in which government ownership and operation of the Western Railway of France was brought about. It was an entangling alliance between the government and the railways which was different in form but similar in substance which caused the railways of Italy to be transferred to government ownership and management in 1905. Examples might be greatly multiplied.

Mr. Amster's is only one of many proposals which recently have been made to have the government of the United States intervene very directly in the financial affairs of our railways. One proposal which has been made is for the government to buy 100,000 freight cars and put them in service. Another has been for the government to acquire ownership of all the freight cars in service. The *Railway Age Gazette* opposes all plans of this kind because it believes that the adoption of any of them would create a situation which would lead inevitably to government ownership without the question of government ownership ever being considered squarely upon its merits.

There has not been a single case in history where government ownership of railways has been adopted because the public, after full consideration, has deliberately decided that it was desirable upon economic, political and social grounds. The people of the United States ought to refrain from creating conditions which would make it impossible to consider the question of government ownership upon its merits. If we are ever to have it let us adopt it, not because we shall have created conditions which make its avoidance impossible, but upon the ground that we believe it will contribute more to the welfare of the public than private ownership and government regulation.

Letters to the Editor

CARLOAD—MINIMUM WEIGHTS

JAMESTOWN, Cal.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

In your editorial on page 48 of your issue of July 13, you mention a very vital fact in regard to heavier loading of cars when you state that "the receiver of freight is even harder to reach than the shipper." This objection has been raised by shippers in asking for carload rates, and I believe this would be an opportune time to readjust that item in all tariffs.

All of the railroad commissions seem to be adverse to the raising of tariff rates, but I believe a concerted action to raise the minimum weight for carload rates would meet with only a moderate objection. If such an increase were made universally I believe the shippers would endorse rather than object to the change. There are very few commodities that cannot be loaded to exceed 30,000 lb. to the car and such items could remain as at present.

S. H. SMITH,
Traffic Manager, Sierra Railway of California.

PSYCHOLOGY AND EXPERIENCE

ALBANY, N. Y.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

Your correspondent who writes from California (Allen H. Babcock, July 20, page 96), about psychology and other things, proposes to change the whistle signal for highway crossings, so as to have a long blast come last; this to accommodate the rule to the idiosyncrasies of careless enginemen. Believing it to be out of the question to reform the men, he would reform the rule. Is this the best way out of the difficulty? Look for a moment at past experience.

For half a century, more or less, the crossing signal consisted of only one blast; and everybody was happy. Is there any need for having this signal different from the signal signifying the approach to a station? If the way to improve our whistling is to make it easier for the engineman to adjust his mind to what is demanded, a change from four blasts to one blast would be a very simple way to go about it. I am informed that one prominent eastern road has—at least on some divisions—discontinued the use of the station-approach whistle-signal. Discontinuing it everywhere might not be an unprofitable experiment. The argument for moderation and common sense in whistling has been before the railroad world for years and yet does not make much progress; perhaps the easiest way to make such arguing effective would be to change it into a proposal to modify the whistling in this way—urge its abolition! Where crossings have an attendant the use of the crossing whistle, in numerous instances, has been discontinued at such crossings with satisfactory results.

It must be remembered that however simple or natural may be the requirement of the rule, there will still be the necessity for strict discipline. The hardest characters to deal with are not the men who blow a long blast because they believe it to be more suitable than that prescribed, but, rather, those whose mental operations are so unsystematic that they take no thought at all, except just enough to keep clear of censure. On the Boston & Albany, where the single "long" blast was in use at crossings for many years—and long after it was abandoned on most roads—the superintendents had to call enginemen to account frequently for annoying the residents along the line. The best of the runners complied with their instructions by reducing the single blast habitually to about one second. The writer has noticed recently the whistle of a factory, which had been complained of as an illegal nuisance, because of its excessive noisiness. The court handed out a few sentences of common sense and that whistle now sounds regularly in only one second—and it seems to be satisfactorily effective.

One of the most pervasive facts to be remembered by American railroad men is the persistent conservatism of the American Railway Association, the code of which prescribes the "two long, two short" signal. Assuming that the signal ought to be changed, the committee of that association would probably demand that the proposition be supported by a good body of experience in favor of changing. Another fact is that many men in that association, as well as many other railroad officers, all over the country, are Morse telegraphers; and every one familiar with the Morse alphabet will agree that the present crossing signal, which means "7," is preferable to the reverse arrangement of the sounds which, from long experience, they have come to consider an unpleasant sound. The psychic theorizers will tell you that there is a pleasing rhythm in — — - - ("7"), that is lacking in the opposite arrangement - - — — ("ut"). On one Eastern road, formerly, the crossing signal was one short, one long (letter *a*) and every telegrapher who ever heard it will say that it was a disagreeable sound.

I am not saying that telegraphers ought to rule our whistling or even that it is necessary, absolutely, that whistle signals should be pleasing to anybody; but it is only fair to take into account, in trying to adjust the code to the idiosyncrasies of the enginemen, that the rest of us have ears which ought to be considered. Mr. Babcock calls for discipline "along common sense lines," fearing unfavorable results from "arbitrary" discipline; but one of the most refreshing manifestations of common sense in whistling is that which is exemplified by the runner who constantly strives to please the public—a thing which all railroad men are being urged to do at the present time. The engineman who is thus striving cannot do better than to cut short his whistling. In studying how to shorten he will not fail to see other avenues of improvement.

F. W. H.

THE POWER OF THE "LABOR VOTE"

CHICAGO.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

There has been a marked tendency in recent years to pass laws favorable to labor unions and it has been evident in many cases that the only excuse for their enactment has been to secure the favor of railroad organized labor because of its supposedly great voting strength. It is well to consider whether the facts justify this supposition.

An investigation will disclose that railroad brotherhoods vote but a small per cent of their total membership. The men are away from home so much of the time that many of them will be absent on the registration and election days unless they are willing to lose a trip or two and this is rarely the case because it would mean a loss of from $10 to $40. A certain proportion of the men are never interested in elections one way or the other and of the remainder many who were home on registration day are absent on election day or vice versa so that the number who are actually enabled to vote is very small. Of these a certain proportion vote against the wishes of the organization because of party affiliation.

Thus it is seen that the legislators have greatly overestimated the power of the railroad unions. But the fact remains that a great many laws have been passed which benefit a few labor leaders, while working an injury to the railroads, the shippers—in fact, all the rest of the community. For instance, the federal locomotive inspection law is costing the railroads millions of dollars without working

in any way to their advantage. It is also costing the government about $3,000,000 a year without any corresponding benefit. The full crew laws passed in various states represent another instance of misguided legislation for which there is not the slightest gain to any one except the brotherhoods.

It is high time for the general public to open its eyes to the wasteful expenditure of public money and for it to realize that all money used in operating the railroads comes from the public's pocket and that the cheaper a railroad can be operated the less it will cost to transport freight and passengers from one place to another.

R. S. BARKER,
Machinist Helper, Chicago & North Western.

THE OSTRICH IN THE SUPERINTENDENT'S OFFICE

REDSTACK, Ark.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

William Shakespeare, Mark Hanna, or some other eminent gentleman once asserted that truth is stranger than fiction. This party evidently had never perused any of the morning operation reports of a modern railroad. It is safe to say that the vivid imaginatory powers displayed in compiling some of them would, if given proper publicity, make any strictly truthful contributor to modern literature sob in earnest with envy. Of course, there are exceptions and in some instances truth crushed to the right-of-way will rise again, but in the majority of cases a comparison of the reports of movements of trains and tonnage to the actual performance will reveal discrepancies that cannot by any stretch of politeness be called slight.

I once honored with my services a road upon which there was a particular abhorrence toward reporting any delays due to failure of engines to make steam on account of poor coal. Nearly every train that crossed the division had trouble of that nature but it was particularly impressed upon all concerned that it should never be reported. Whether or not this was due to a more than friendly interest in the welfare of the coal company on the part of some one connected with the railroad, I do not know; but the orders came from headquarters and they were obeyed. The methods used in covering up of the delays properly chargeable to poor coal, were left entirely to the discretion of the individual who compiled the reports, who in this case happened to be me. I was once confronted with a deficit of forty minutes in the movement of the pride and joy of the line, the limited, generally known as the "Spanker"; and there was absolutely nothing to fasten the delay onto. It was reported by the engineer as due to poor coal, and a personal inspection of the coal in the tender showed it to be a dirty mess, about as inflammable probably as wet asbestos. Orders are orders, however, and after much deliberation I resorted to the expedient of reporting forty minutes delay at Zanzibar, "account tree fallen across track and calling section men to remove same." No one was ever unkind enough to call my attention to the fact that there wasn't a tree growing within a hundred miles of Zanzibar.

In another case the superintendent of a division which included a considerable stretch of joint track, on which there was supposed to be no discrimination between the trains of the owning and renting lines, was very sensitive about the condition of his roadbed—I will admit that he had just cause for his tender feelings—and gave strict orders that no delays were to be reported as due to slow track. The delays had to be charged to something and a budding genius among the despatchers devised the method of showing all delays to the trains of one road as being due to meeting trains of the same or superior class of the other road. This in spite of the fact that frequently the trains enumerated as causing the delays were not within the boundaries of our division at the time mentioned. But the reports for each road went to different sets of officers and they seemed to be satisfactory.

What is the purpose of these reports anyway? If it is to portray the situation on a division or a grand division in as pleasing a manner as possible, so as to furnish some one with light fiction for the diversion of their minds, they succeed admirably. If it is to show what has actually happened during the preceding 12 or 24 hours and expose operating deficiencies, they are a dismal failure. Frequently a department or division head, who would not for a moment tolerate dishonesty on the part of a subordinate in dealing with himself, will not only encourage, but sometimes practically demand, dishonesty on the part of that same subordinate in dealings with the general offices.

Nor is this paradox confined to division offices. A suggestion of the same tactics may be frequently found higher up.

It is a poor policy at the best, and frequently the failure to report adverse conditions in their true light acts as a boomerang when an attempt is made to secure funds or permission to correct those conditions. Furthermore the desire to cover up some particular kind of detention results sooner or later in the juggling of reports between connecting divisions, and this sometimes results in a more serious reflection than to face the facts squarely.

One factor which has aided largely in bringing about this condition is, I believe, the practice in some general offices of delegating the first reading of these reports to some clerk who, by virtue of three months' experience as office boy and two months' opening envelopes, is classed as qualified to analyze difficult operating problems; and giving him carte blanche instructions to "follow up" all remediable delays. The results sometimes are ridiculous. I recall receiving once one of these general office "bullets" peremptorily demanding why No. 1 was delayed seven minutes at Bearskin, meeting No. 2. The logical answer was that eleven miles intervened between Bearskin and Wolfhide—the next siding—and that double track between the two points was painfully noticeable by its absence. But it was necessary to be more diplomatic and skilfully hint that No. 2 was seven minutes later at Bearskin than was anticipated. Such things burden division offices with unnecessary correspondence and cause a great deal of irritation among the men who are doing their level best to keep the railroad running smoothly. The doctoring of reports is a logical result. The way the general offices go off half-cocked about such things would indicate that a division officer isn't competent to solve his minor problems himself at all. I believe that if some persons at headquarters were not so conscientious about sending a couple of dozen biting telegrams every time they read one of these reports, and if they would manifest more confidence in the division officers, they would find that the railroad was being just as well taken care of and that for some reason, the reports told more about what was actually going on than they ever did before.

Another factor, and the main one, is the fact that sometimes there are events daily taking place on a railroad of which everybody is aware, but which no one wants to see detailed on paper. To nominally conceal these things seems to satisfy some people. An ostrich is satisfied to hide its head in the sand.

Nor is the practice confined to any one set of reports. Tonnage sheets, car reports, and a great many others, come in for their share of garbling. I have known of more than one railroad man who rose mainly through his skill with a rubber eraser.

Honesty should be the best policy in railroading the same as in any other business—but it is plain that in some features of the business it is not so considered.

HOMER PIGEON.

NEGLECTING THE DESPATCHER

LITTLE ROCK, Ark.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

Inspection trips made by officers constitute one of the worries of every despatcher. He knows he will receive little, if any, advance information as to their movements and he must handle the situation on a prophetic basis, trusting to luck. From a purely selfish standpoint an officer should make it a point to keep the despatcher posted on all anticipated movements, in order to give him an opportunity to figure with other trains. The writer has had some very trying experiences with official parties. One case in particular is recalled, where the superintendent was in charge, with a motor car, running under orders. The conductor reported for orders at 8:45 a. m., to leave at 9:30 a. m. He finally left at 1 p. m. and all the information I could get in the meantime was that they expected to move most any time. All this time I was fighting a road full of trains. Some trains were delayed by having to be stopped for orders at places where delays could not be avoided.

We are everlastingly after our conductors to keep us posted on their movements and our officers say they must keep us advised of when they will be ready at stations, etc.; why not the same rule for *all?* A despatcher does not feel like asking the superintendent every time he stops, what he is going to do; it becomes embarrassing. The conductors in charge could be of great assistance to the despatcher, but many of them think because they are with an official party all requirements are suspended, and they do not exert themselves in the least.

C.

"SWAT THE LETTER" CAMPAIGN

SAN BERNARDINO, Cal.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

Did it ever occur to you that we have rules and instructions concerning the duties of all our employees from the sectionman to the chief despatcher and that each is required to be sufficiently familiar with them to render a fair equivalent for value received? Contrast this condition with that of the newly appointed member of the official family. He finds no definite outline of duty laid down, with a possible exception of the number and kind of efficiency tests to be made, the number of days he is required to spend on the road and how to make out his expense account. He spends a few days looking over the new territory and learning to match up new names and faces. Those days will always be treasured up in his memory, standing out in bold relief against the background of future experience in official life, because they were days of freedom from investigations, freedom from the burden of unanswered correspondence and the delving into circumstances surrounding some event of more or less importance so long past that it has passed from the memory of the employees involved.

This new member of the official family gets back to his office and unless he is a rare specimen commences where his predecessor left off—writing or rather dictating letters. Unquestionably events detrimental to the service should be looked into with a view of preventing a repetition. If of sufficient importance an outline should be given to the next in command and with it the action taken for correction, or recommendations as to the remedy needful. But to what extent this thing has grown and what a handicap on efficient service it has become can only be determined by a careful examination of the evidence at hand.

Colonel Charles Hine introduced steps to reduce correspondence—a commendable project—but even his system did not eliminate the man who, with possibly good intention, will insist on returning you the file of correspondence for further investigation and additional statements concerning some trivial matter that perhaps should never have incurred the expense of one sheet of paper. Is there any one on your railroad writing letters to people in the same building as himself—possibly on the same floor, or in the same room? Who is it that requires all this information and what use is made of it? The investigation necessary to furnish an answer to this question must start from the top—obviously we on the borderland can do nothing. Personally, I doubt if many general officers are aware of how much correspondence, routine and otherwise, could be forever dispensed with and not only make a saving in paper and clerical force but not loosen the reins on discipline one iota.

Consider the case of a trainmaster on a district a hundred miles or so removed from the division headquarters, practically level and in the midst of double track work with eight or ten work trains working under the supervision of the engineering department, automatic block signals being interfered with by new work, sidings full of outfit cars to hamper the locals, both freight and passenger business abnormally heavy, getting a mixed assignment of power—really the leavings of the other divisions because this was a level district and it could make a better showing with weaker power—in fact, where the engines are sent them to finish out their mileage. Add to this an unusually cold winter with plenty of snow. This trainmaster put on storm clothes and went to the front. His chief clerk handled the bulk of his correspondence but sent the more important letters to him on the line all written up and ready for signature together with his copy of the morning report and a birdseye view of the railroad.

At one point trains were bunching on account of no water. He was there in the middle of the night and found the pumping was done by a gas engine looked after by a man who had two such plants to care for about 40 miles apart and he was at the other plant. He woke up the town marshal who knew how to operate the engine and paid him in advance for his services until the water service department could correct its mistake.

Here are the conditions he found at another point at the middle of the district: Cleaning the fire—crew gone to eat—headlight will not burn—engine leaking—fireman sick—grates down—16 hours got us, etc. Early in the evening this condition was made worse by the engineer of a westward freight moving ahead in the oiling process while the fireman was taking water, resulting in breaking off the penstock and filling the link belt chute cellar full of water which promptly froze and put the coal chute out of business. He arrived in time to find an engine still alive and a crew with a little time left under the federal law. Took this engine and crew 15 miles to a siding full of live outfits and brought the entire string back, in the meantime finding a foreman who could talk English. Then began coaling up from the cars.

Trains tied up under the federal law will also freeze up. He was along with the relief crew to break the train loose a few cars at a time. Leading, coaxing disenheartened men to work against such odds, lending them money to eat with, he kept in touch with a loyal chief despatcher who moved things when there was a hole to move them through.

Look at the other side of the picture: Officer on the same staff at headquarters—bankers' hours—steam heat—comfortable chair—morning paper—also morning report—analyzes the morning report of the district above-mentioned with critical eye and detects a false note in it, an attempt to cover up some real bad condition. He turns to his trusty stenographer and dictates a scathing sarcastic letter to this trainmaster, and upon second thought sends a carbon to the superintendent. The first letter reaches the subordinate officer the morning after one of these strenuous nights, followed a day later by the other barrel from the superintendent's chief clerk.

Is there any question that supervision by retrospection is a deadener? A glance at present methods of handling OS&Ds and live stock claims demonstrates the fallacy of the methods, for when the file reaches the bottom of the ladder and starts back a rubber stamp could be made summing up the result in the following: "No rough handling while in my charge." Conductors and engine foremen have been known to reply to these claims without going to the trouble of looking at their record to see if the shipment was handled by them at all.

If a "swat the letter" campaign is to be started it should begin high enough in the official world so that all departments will be affected. This letter has been confined to the operating department, but there exists enough abuse in other departments to attract the attention of the rank outsider. An effort at reform started from the division office is useless. Why it is not started from the other end may in a measure be due to the higher officer becoming so interested in the duties of his new office that he forgets the wrong that needed righting in his former position. So it is to the man higher up this appeal must be made. We have specialists in everything nowadays. Why not choose a man of ability and experience and attach enough authority to him to take him through the files of all departments and add weight to his words of instruction and advice to departmental heads as well as their subordinate officers and clerks to the end that tons of valuable paper may be saved, typewriters stored away and clerical forces reduced, not to mention the precious liberty to the line officer of being able to do today's business while it is today, thus saving the dollar on this day's operation instead of spending this day explaining why the dollar was spent yesterday?

TRANSPORTATION.

STRONGER CONTAINERS—AN AID TO BETTER CARLOADING

NORFOLK DOWNS, Mass.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

The article appearing in your issue of July 13 entitled, "The Barrel Carries Its Own Running Gear," might lead the unthinking reader to believe that barrels could be substituted for all rectangular containers.

I agree in the main with the writer of this article that the barrel is one of the most desirable containers. Its use economizes in labor and loss and damage claims. While more space is required than with the rectangular package, the carriers receive compensation for this through the saving in damage and economy in labor.

But how can the barrel be used in these times for ordinary package goods? In the days of our forefathers, nearly all commodities were shipped to the corner grocery in bulk. The barrel or bag was the logical container for products in that form. Newer methods of living have created a demand for smaller units of merchandise. By the use of machines, the manufacturer reduces this cost of sub-dividing and insures to the consumer an absolutely sanitary package.

In a comparatively few years this packaging of goods has grown to a point where the container cost alone amounts to over 120 millions annually. Gradually, even articles like flour, salt and sugar have been going from the larger barrel units into the smaller sacks and cartons. In Minneapolis last year 94½ per cent of all the flour shipped out (19,000,000 barrels) was shipped in sacks. The greater percentage of salt and sugar used in the household is being shipped in carton form.

I believe you will agree that the barrel would not be practical as a container for cartons of any kind, and while it may be most desirable as a container, its field is limited. Customs have settled it that merchandise is to be shipped in rectangular containers.

The shipper, to economize on these containers, is seeking lighter and more fragile cases, with the result that the railroads, while paying at least $15,000,000 in loss and damage claims, are also deprived of a large percentage of car space, thus increasing their operating expenses many millions. Both items of expense might well be considerably reduced by the use of pilfer-proof cases, sufficiently strong to withstand all shocks of traffic. If, as has been shown, eggs can be shipped from Russia to Pittsburgh, 9,000 miles, without one broken egg, there is no reason why the carriers should pay thousands of dollars annually in New York City on eggs that have been shipped less than 100 miles.

The figures tell us that 45 per cent of car space, as a whole, is unused. According to a statement by Grover G. Huebner, Professor of Transportation and Commerce at the University of Pennsylvania, it is costing the railroads not less than 209 millions to operate the 45 per cent of waste space.

"Now anything that can prevent this loss to the railroads, and at the same time will help shippers put money in their pockets, ought to be worth while. This is especially true, now that the purchase of new equipment to relieve congestion is made difficult because of the great demands on the steel mills and foundries.

"Poor packing cases are of themselves one of the worst drawbacks to efficiency in freight transportation and handling on all railroads in this country and, indirectly, they bear upon most of the other causes of underloading freight cars and on congestion at terminals. With a steel case that could be locked securely, which could be plainly marked, so that the destination always could be seen by the handler, and which would stand piling one on the other to the top of the car, millions of dollars paid annually in claims for thefts and for lost and damaged articles, as well as a part of the losses resulting from waste space, would be eliminated."

While fragile containers may be sufficient for a full carload of cereals to take one example, is it not true that when these same fragile containers are put in L. C. L. freight their weakness prevents the loading of the car much more than one tier deep?

It is the writer's belief that much of the congestion in terminals (where three cars are required when one should do the work) could be overcome; a large percentage of the annual payments for loss and damage could be eliminated, and a substantial amount of operating expenses could be saved to the roads were all merchandise offered for shipment in indestructible containers, sufficiently strong to allow of their being stacked to any height without fear of damage, regardless of contents. It is easy to see that the amount saved through this practice would mean far more to the roads than was ever saved by the tank car, and if the same consideration were given the shipper on containers of this type, his economy would be in the use of a container so strong that its life would be continued indefinitely. With no additional freight to pay, a strong case making 100 trips would be much cheaper for him than 100 cases for the same work.

Anything that we may do to discontinue the extravagant practice of throwing $120,000,000 a year into the kindling-wood pile will work to the benefit of all. Barrel stock will be cheapened. The railroads will find that ties will be cheaper. Paper, which has gone up over 300 per cent certainly will be benefited if this is thrown back into paper pulp, as it represents practically one-half of the pulp industry.

We are being shown daily the importance of conservation in all lines. I believe this to be one of the most important changes possible, looking toward elimination of waste. The shippers, however, without concession from the carriers, are absolutely powerless to carry it into effect.

As I have before stated, if the carriers will recognize the benefits accruing to them by granting similar concessions as

were granted to the tank car, they at once add millions to their profits, save millions to the shippers, and by reason of the added material thrown back into the paper industry, relieve the public of an excessive burden being carried at this point. W. H. DOBLE.

MISSIONARIES ON PUBLIC RELATIONS

BOSTON

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

Your editorial note of July 27 proposing to stimulate trainmen to be missionaries on public relations opens up a great field of possibilities. Any railroad employee who values his job and who aspires to be really efficient in the service of his employer ought to be glad to embrace the opportunity, as offered by the general manager of the Illinois Central and as described by you, to enlarge his usefulness and at the same time to make his place pleasanter. One cannot really enjoy his work—if it bear any relation whatever to the general public welfare—unless he has an outlook beyond his own narrow sphere.

But your scheme does not seem to contemplate much of any active propaganda, beyond a series of circulars; and circulars do not go far in settling such knotty problems as this one. The reader feels like Mr. Barnum, who was served (at regular rates) with a beefsteak which was so small that, classing it as a mere sample, he told the waiter to "bring on some." If conductors and enginemen—to say nothing of the other classes to which Mr. Foley appeals—are to do any missionary work worth counting they must be trained in polemics. The conductor who knows how to meet the critic who is saturated with anti-railroad notions such as are circulated in Congress and other legislative centers, and who, in addition has a brother-in-law who nurses an unsettled claim of $100 against a railroad—that conductor is a rare bird. The average conductor not only is poorly equipped for sharp discussion—he has not even got up to the level of *desiring* to emulate that quick-witted Illinois Central man.

Some time ago, on the New Haven road, I noticed a passenger conductor who, in a brief conversation, knocked a lot of erroneous notions out of a passenger's head; and he did the job with a good deal of skill. But, it was evident that he needed a lot of information himself. Moreover, though he was a good advocate I am not sure that he was an A1 conductor, for one of the brakemen was inefficient. To have a good conductor and a good speechifier in the same man, and be sure of it every time, systematic training will be necessary.

I would suggest that Prof. W. J. Cunningham, of Harvard University, be engaged to stir up interest in this subject. The art of argumentation is one requiring a good deal of study; and the "university extension" idea should be mobilized for the purpose of turning Mr. Foley's suggestion to really useful account. On his own road he may, perhaps, have all reasonable educational facilities provided; but if this propaganda of promotion is to be of any appreciable use it will have to be pushed simultaneously on a hundred other roads.

You say (1) that the more intelligent employees of the Illinois Central will accomplish something if they are sufficiently courteous; (2) that some of them are prejudiced against the road; (3) that neither of these two classes are trained debaters and (4) that the importance of tact should be impressed on all. Surely, there is a good deal of work to be done before the expected good results will appear above the surface. If Harvard or any other university undertakes to qualify these or any railroad men by "extension" the *measure* of the extension will resemble the trombone used in Billy Sunday's entertainment—that is to say, it will have to be extreme.

Professor Cunningham would probably begin with a debate. Why should not every railroad superintendent spend time and money liberally in training his conductors and enginemen to debate effectively? A debating society could be made to improve a conductor's ability, as a converter of farmers, by 100 per cent. Every ambitious man in the train service ought to welcome any means of education in this line—intimate knowledge of the relations of the railways to the public—if for no other reason than the improvement which it would work in his chances of promotion.

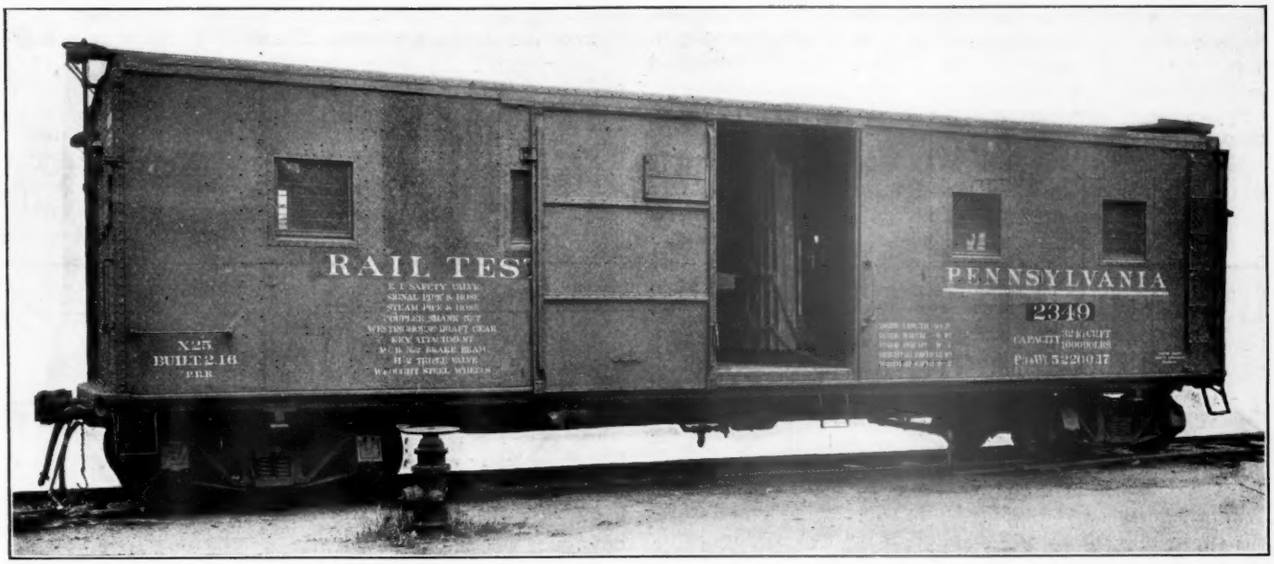
A debating society ought to be welcomed by railroad men everywhere. Even the higher officers often waste their energies, and make ineffective arguments in dealing with the public, because of incomplete acquaintance with the facts of their own case and insufficient appreciation of the position of the fellow on the other side; his feelings, his views, and his facts. An open debate is the only sure means of curing these weaknesses. To send a man to break down the prejudices of farmers and politicians against the railroads, without first giving him some actual practice in meeting such prejudices, is as shortsighted as to meet a damage suit in court without a lawyer; or to set a trolley-car motorman to handle a 50-car freight train down a two per cent grade. Practice makes perfect; and in this matter there is no substitute for practice.

A debating society would be a valuable instrumentality, on most roads, to start some real, normal thinking in the minds of those conductors whose friendliness toward their employer is weak or qualified; conductors whom a brief letter from the superior would not touch. A railroad is such a large and complicated concern that feelings of unfriendliness, indifference, and even enmity, on the part of employees, are to be expected. Such feelings may be grounded in some detail or minor feature of the relations between employers and employees, and be a real drawback, while yet in the main the relation is actually friendly. Immense good would be done by clarifying the ideas of employees thus affected. Various schemes designed to overcome ill-feeling among employees have been tried; but we are still far from the ideal; why not try something different?

A debate develops little profit unless the sides are somewhere near evenly matched; and railroaders arguing for railroads ought to have as an opponent Clifford Thorne, or his equal, every time they intend to make and carry through any strong and important argument. The doughty Iowa advocate scarcely deserves this commendatory notice; but I refer to him simply to remind railroad men to beware of antagonists who are too reasonable! It is also important to find some one with staying power, dignity and serious purpose. Young men of this kind ought to be discoverable in every large city. It would pay well to compensate a few such men sufficiently to insure continued and persistent attention to the subject. Some reward ought to be offered for winners in debates; but not many railroad men have the technical ability as forensic specialists to argue effectively against their own side; hence this suggestion that the anti-railroad argument be always entrusted to persons who are not strongly pro-railroad.

Let us give "safety-first" and some of the other specialties a rest, for a time, and try something new! I heartily agree with Mr. Foley that trainmen ought to defend their employers; but, like the soldiers who are to defend us in France, they need a period of intensive training. J. A. H.

RAPID GROWTH OF ELECTRICAL EXPORTS—American electrical apparatus is gaining rapidly in popularity the world over. A compilation by the National City Bank of New York shows that the value of electrical machinery, appliances and instruments exported from the United States in the fiscal year 1917 aggregated more than $50,000,000 against $30,000,000 in 1916 and $6,000,000 in 1900.

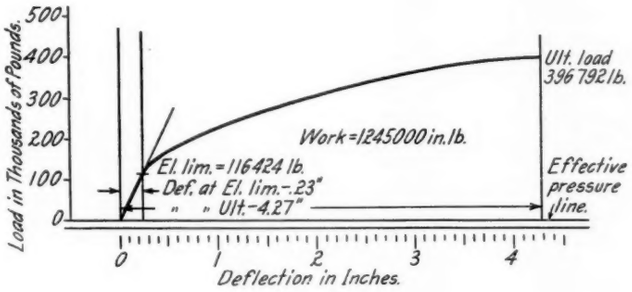


The Exterior of the Test Car

Testing Rails by the Quick-Bend Method

A Description of the Apparatus Built Recently by the Pennsylvania Railroad to Replace the Drop Test

THE Pennsylvania System first introduced the present drop test into its specifications for carbon steel rails in 1900, at which time the entire output of rail steel was produced by the Bessemer process, which, owing to the resulting high phosphorus content, imparted the predominant physical property of brittleness to the rails. Due to this fact some form of shock test was required to eliminate such rails as showed excessively brittle characteristics. The drop test proved the most adequate for this purpose. However, rails of open-hearth steel have come into general use since 1908, and at the present time practically all Pennsylvania orders for rails specify open-hearth steel, which, being low in phosphorus content, has the chief physical property of ductility and is much more tenacious for a corresponding hardness than Bessemer steel.



A Typical Diagram

It has been the experience that the standard drop testing of open-hearth rails gives such a paucity of information as to preclude the drawing of definite conclusions regarding the relative merits of rails from the different manufacturers; in fact, the limited data which are obtainable from this method of testing would indicate, owing to their slight variations, that almost all open-hearth rails have approximately the same physical properties. It was thought, therefore, that an investigation should be conducted in order to determine the fitness of a transverse rapid bending test as an alternate or substitute for the present drop test of rails, with a view to obtaining more conclusive information relative to the physical properties, such as elasticity, ductility and hardness of the rail material. Accordingly, this investigation was made on the authority given for the test after a discussion of the subject at a meeting of the Pennsylvania System rail committee on April 9, 1915.

The sub-committee appointed to conduct this investigation submitted a report entitled "Rail Tests, Quick Bend Method," which was reviewed by the rail committee on November 10, 1916. Conformable to the recommendation of this committee an appropriation for the purchase of such a machine as proposed by the sub-committee and its installation on a suitable car for use in making parallel quick bend tests in conjunction with the standard drop test of rails rolled up on the 1917 schedule, was approved by the Pennsylvania Board of directors on November 22, 1916.

Quick-Bend Test Machine

The machine, which was built by the Southwark Foundry & Machine Company, Philadelphia, Pa., was delivered on April 16, 1917, and was placed in service immediately. Tests in accordance with a prescribed program have been conducted at several rail mills up to the present time.

The machine consists of a hydraulic press and intensifier, the design and operation of which were made to conform to specifications outlined under the supervision of J. T. Wallis, general superintendent motive power, Lines East of Pittsburgh.

The press is of the four-column inverted type, having a clear distance of 3 ft. 4 in. by 12 in. between columns. The main ram, 16 in. in diameter with a 12 in. stroke, is cast solid with the moving platen, which is guided on the four columns. The twin pull-back rams, 6 in. in diameter, are symmetrically located at the sides of the main ram, and are connected with the moving platen by 1¾ in. rods. The overall dimensions of the press are 5 ft. 6 in. by 3 ft. 1 in. at the

base and 8 ft. 11½ in. in height. The maximum clearance between the moving platen and the base of the press is 2 ft. 2 in. The total weight complete with the loading head and two supports is approximately 22,000 lb.

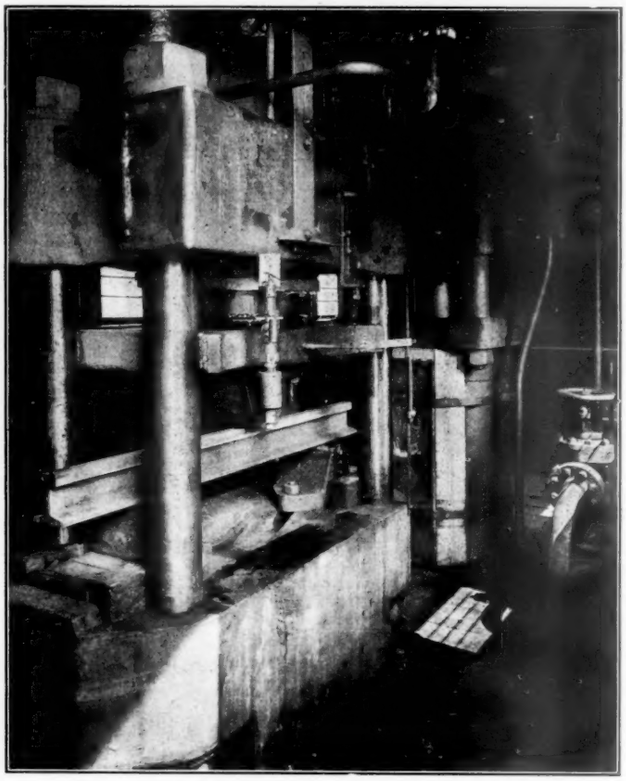
The overall dimensions of the intensifier are 2 ft. 11 in. by 2 ft. 11 in. at the base by 9 ft. 6½ in. high. It is of the single pressure type with a total weight of approximately 11,000 lb. The ram which extends from the high pressure cylinder to the base pressure cylinder is integral with the base pressure piston, and has a total stroke of 36 in. The diameters of the ram and the base pressure piston are respectively 9 in. and 26 in., which give a step-up ratio of about 8.35 to 1. The high pressure intensifier cylinder is directly connected with the press ram cylinder through a 2 in. extra heavy pipe provided with a 2 in. check and stop valve.

The operation of the machine is controlled by a bronze three-way valve having a balanced exhaust. By admitting 450 lb. per sq. in. line pressure to the base cylinder of the intensifier, the pressure in the high pressure cylinder thereof, and consequently in the ram cylinder of the press, is raised to approximately 3,760 lb. per sq. in., developing a total capacity in the press of about 756,000 lb. (378 tons). The 36 in. stroke of the intensifier ram actuates the entire 12 in. travel of the main ram by intensified pressure alone, thus assuring a smooth, continuous curve on the indicator card. The machine was accurately calibrated in order to ascertain its actual effective working pressure.

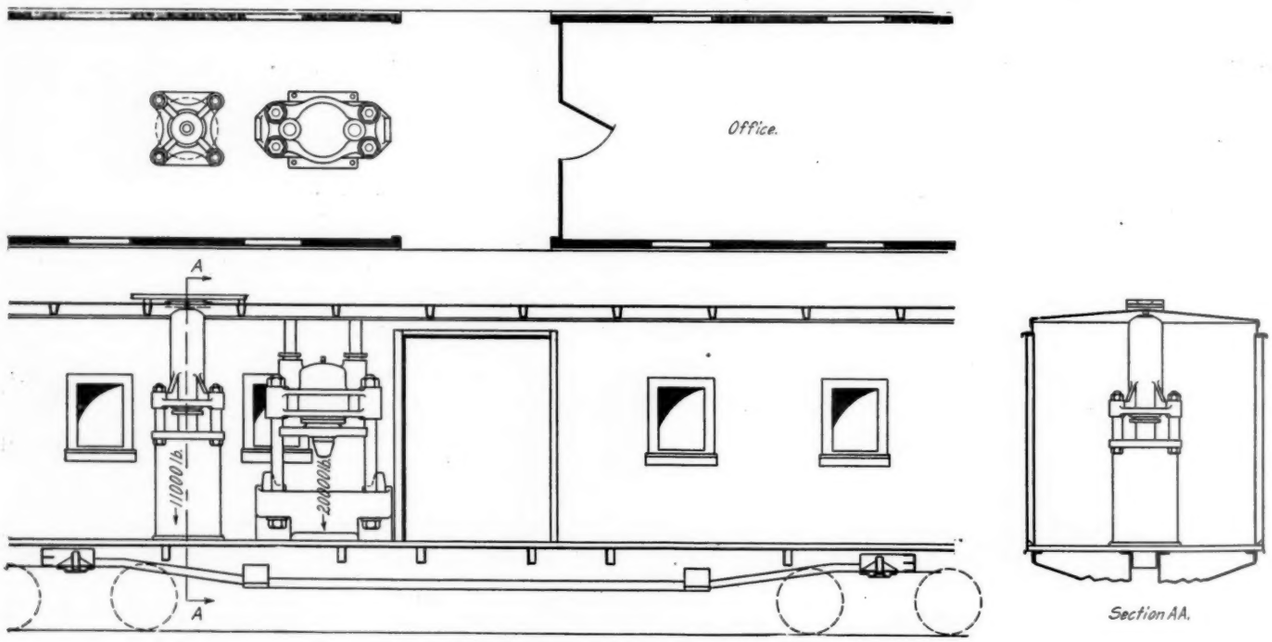
The machine is so designed that no more than 60 per cent of its total capacity is necessary for the maximum test requirements in order to prevent all undue strain and wear on the parts. Safety guards are arranged around the machine, to prevent the broken pieces from flying when the rail specimens rupture under test.

A hydraulic indicator is used to register the pressure required for a relative deflection of the specimen, the indicator being in direct communication with the main ram chamber through a ½-in. pipe, the movement of the indicator drum being actuated by the stroke of the main ram. A general arrangement of the indicating apparatus is shown in one of the photographs.

The rail test specimen, properly marked, is placed on the supports of the press and pressure is applied through the loading head on the ram at the center of the rail until rupture of the specimen occurs. During this action, which requires approximately seven seconds, an indicator card showing increments of deflection and corresponding pressure is taken. An accurate reproduction of such a card is shown in a photograph. The abscissae of the curve indicate deflections, whereas the ordinates obtained in each case represent the load in thousands of pounds. The elements taken from



General Arrangement of the Testing Machine



Plan and Sections of the Testing Equipment and Car

the card are the deflection and load at the elastic limit and the ultimate strength. The work required to fracture the specimen is also obtained from the card.

It is obvious that the complete ranges of elasticity and ductility of the specimen are represented graphically on the card thus produced, which provides a means of making a precise study of the physical properties of the material in the rail.

The machine is installed on a modified class X-25 car, the general arrangement being shown on the drawing. This car is equipped for passenger train service.

It has been demonstrated from comparative drop and quick-bend tests that rails which have met the drop test requirements showed undesirable physical properties when subjected to the quick-bend test. The narrow limitations of the drop test when compared with the advantages of the quick-bend test in the determination of the ranges of elasticity and ductility of the steel would seem to warrant the adoption of the quick-bend method of testing rails, and the data obtained from the program of tests being conducted on this year's rolling is to be analyzed thoroughly with a view to establishing a specification adaptable to the quick-bend test.

WASHINGTON CORRESPONDENCE

WASHINGTON, D. C., September 4, 1917.

TRANSPORTATION OF THE NATIONAL ARMY

Practically all arrangements have been made by the railroads for beginning on Wednesday of this week the transportation of the 687,000 men who will constitute the first unit of the new National Army from the 4,531 points designated as concentration points to the 16 cantonment training camps to which they have been assigned. With the approximately 300,000 members of the National Guard, who have also begun the movement to their training camps, many of them preparatory for early departure abroad, this will place upon the railroads the task of moving nearly 1,000,000 men within the next few weeks.

The National Guard is being moved in military units with its equipment and impedimenta from the various local camps and armories. The men drafted for the National Army are moving practically as civilians, to be retained and furnished with equipment after their arrival.

The American Railway Association was directed to prepare schedules for the movement and the work has been done by the passenger associations in conference with representatives of the operating departments. The original plan was to move 30 per cent from each local concentration point at the first entrainment, but under the revised plans of the war department only 5 per cent of the men, or about 35,000, will be transported in the 5-day period, September 5-9. As they will be moved at the rate of 1 per cent, or 7,000 men a day, it is not anticipated that this military traffic will cause any disarrangement of regular passenger and freight schedules.

In the five-day period beginning September 19, the railroads must transport 40 per cent of the new army, or 274,800 men, at the rate of 34,700 a day. Another 40 per cent of the army will be carried to the cantonments from October 3 to October 7. During these two periods the passenger facilities of the roads will be fully utilized. The remaining 15 per cent of the men will begin entraining October 17.

The number of recruits to be transported from the states to the various cantonments in the next six weeks follows:

To American Lake, Wash.—From Alaska, 696 men; Washington, 7,296; Oregon, 717; California, 23,060; Idaho, 2,287; Nevada, 1,051; Montana, 7,872; Wyoming, 805; Utah, 2,359; total, 46,143 men.

To San Antonio, Tex.—From Texas, 30,545 men; Oklahoma, 15,667; total, 46,212 men.

To Fort Riley, Kans.—From Kansas, 6,514 men; Missouri, 18,660; South Dakota, 2,717; Nebraska, 8,185; Colorado, 4,753; New Mexico, 2,292; Arizona, 3,472; total, 46,593.

To Annapolis Junction, Md.—From District of Columbia, 929 men; Pennsylvania, 32,859; Maryland, 7,096; total, 40,884 men.

To Yaphank, N. Y.—From New York, 43,000 men.

To Des Moines, Iowa.—From North Dakota, 5,606 men; Minnesota, 17,854; Iowa, 12,749; Illinois, 9,366; total, 45,575 men.

To Louisville, Ky.—From Kentucky, 14,236 men; Indiana, 17,510; Illinois, 10,573; total, 42,319 men.

To Rockford, Ill.—From Wisconsin, 7,181 men; Illinois, 31,714; total, 38,895 men.

To Battle Creek, Mich.—From Michigan, 30,291; Wisconsin, 5,695; total, 36,486 men.

To Chillicothe, Ohio.—From Ohio, 38,773 men; Pennsylvania, 4,000; total, 42,773 men.

To Wrightstown, N. J.—From New Jersey, 20,665 men; Delaware, 1,202; New York, 20,241; total, 42,108 men.

To Little Rock, Ark.—From Arkansas, 10,267 men; Louisiana, 13,582; Mississippi, 10,801; Alabama, 8,016; total, 42,666 men.

To Atlanta, Ga.—From Tennessee, 14,528 men; Georgia, 18,337; Alabama, 7,920; total, 40,785 men.

To Columbia, S. C.—From South Carolina, 10,081 men; North Carolina, 15,974; Porto Rico, 12,833; Florida, 6,325; total, 45,213 men.

To Petersburg, Va.—From Virginia, 13,895; Pennsylvania, 24,000; West Virginia, 9,101; total, 46,896 men.

To Ayer, Mass.—From Maine, 1,821 men; New Hampshire, 1,204; Vermont, 1,049; Massachusetts, 20,586; Connecticut, 10,977; Rhode Island, 1,801; New York, 6,000; total, 43,438 men.

PRIORITY OF SHIPMENTS

According to present plans the power conferred upon the President by the priority law to direct that certain traffic or certain shipments of commodities shall have preference or priority in transportation during the war is not to be exercised except when there is especial occasion for it. Robert S. Lovett, chairman of the Union Pacific and now a member of the War Industries Board of the Council of National Defense, who was designated by the President as his agent to issue such priority orders, has thus far issued only the one intended to promote the shipment of an adequate supply of coal across the lakes to the Northwest during the season of navigation, and at present it is understood that no occasion has yet arisen to require immediate consideration of further orders. Many requests for priority in transportation have been addressed to the priority director both by individual shippers and by various departments of the government, but such cases are usually handled individually by investigation of the requirements and a request to the railroad involved or to the Commission on Car Service to furnish cars or to secure expedition in forwarding the shipment.

Under the priority law a finding that a priority order is necessary for the national defense and security is made a requisite and under the interstate commerce law railroads are required to give preference to the movement of government freight so that most requests for priority do not require the issuance of an order but merely the direction of attention to the facts and circumstances, after which the railroad, or if more than one railroad is involved, the Commission on Car Service, may see that the special service is given.

The law provides for the issuance of priority orders to a committee representing the roads as their agent and promptly after its passage the Railroads' War Board sent out to the various roads a form to be filled out designating the War Board as their agent, empowered to receive on behalf of all

notice and service of priority orders. The Commission on Car Service also issued the necessary circular giving the roads instructions as to carrying out the order of August 20 to give preference in the distribution of cars to coal mines served by them for shipments of bituminous coal for transshipment by vessel to ports on Lake Superior and Lake Michigan. The purpose of this order was to secure the shipment of a little over 1,000,000 tons of coal a week to the Northwest before navigation closes and it has been carried out by so distributing the cars that transportation facilities would be available for shipments to that amount without so exceeding that amount as to create a discrimination against other districts.

Judge Lovett has many other duties in addition to those under the priority of shipments law. As a member of the War Industries Board he was in charge of matters pertaining to priority in manufacture of materials and supplies needed for war purposes. The board as a whole is charged with many functions relating to the contracts for supplies for the government and Judge Lovett is also a member of the central board in charge of purchases for the Allies. In his organization priority matters in general are handled by a priority committee which was formerly a sub-committee of the General Munitions Board, headed by General Ayleshire. This organization keeps itself in touch particularly with the requirements of the Army and Navy.

To handle transportation matters Judge Lovett has appointed as his assistant George W. Kirtley, recently assistant to the vice-president and formerly general superintendent of transportation of the Erie. After his appointment by the President, Judge Lovett immediately established relations with the Railroads' War Board and the Interstate Commerce Commission and Mr. Kirtley works closely with the War Board's Commission on Car Service and with the Division of Car Service of the Interstate Commerce Commission. The Commission on Car Service has the organization and machinery for arranging for expedited service or for securing a distribution of cars to points where they are most needed and it also has the necessary data and information furnished by its system of reports from individual roads and its sub-committees in various parts of the country. Ordinarily the Commission on Car Service is in a position to deal with requests of shippers or of the government without any occasion for a request on the priority organization. The Division on Car Service maintains no extensive organization of its own and works in co-operation with the railroad committee, often backing it up with its authority as a governmental body and also representing, in a way, the interests of the public and of the shippers. E. H. De Groot, A. G. Gutheim and H. C. Barlow, of the commission's division on Car Service, regularly attend the meetings of the Commission on Car Service.

War Taxes

Important changes in the proposed plans for war taxation of corporations have been made during the debate in the Senate on the war revenue bill designed to raise a revenue of between two and three billion dollars during the coming year. The Senate Finance Committee agreed upon a further amendment to the war profits section of the bill in the effort to meet the approval of those who have been insisting on higher tax levies of this character and the amendment was reported to the Senate on August 29. Under this amendment it was proposed to levy more than one-third of the total revenues to be derived under the measure, or about $1,286,000,000, from the tax on war profits. As originally reported to the Senate, the war profits taxes aggregated $562,000,000. Another committee amendment provided a change in the method of computing the so-called excess profits of corporations that had sub-normal profits during the pre-war years of 1911, 1912 and 1913, providing that the amount of war profits shall be determined by deducting from the net income of the trade or business received during the taxable year, the average amount of the net income of the trade or business during the pre-war period, but that such deduction shall not be an amount less than 6 or more than 10 per cent of the actual invested capital as of January 1 of the taxable year. In other words, a corporation that earns more than 10 per cent during the pre-war period would be taxed on more than the difference between its income in that period and its income during the taxable year, while the corporation that earns less than 6 per cent during the pre-war period would be allowed to deduct at least 6 per cent for the purpose of determining the taxable proportion of its income during the taxable year. As originally reported to the Senate the bill fixed a graduated scale of rates ranging up to 50 per cent on war profits over 250 per cent. This was increased by the adoption of an amendment providing for a tax of 60 per cent on profits over 300 per cent. It was estimated that the bill would take in taxes about 31 per cent of the so-called war profits on corporations. Various amendments proposed by Senator Johnson and Senator La Follette seeking to take in taxes up to 80 per cent of the net income were voted down by a large majority. A final vote on the war profits section of the bill was to be taken on Wednesday, with a final vote on the bill by Monday, September 10.

NEW RAILROAD LAWS

The legislature of Illinois has amended the act of June 30, 1913, regulating highway crossings, and it is now unlawful to construct a highway across a railroad, or a railroad across a highway, at grade, without the consent of the Public Service Commission. The commission may order the reconstruction or relocation of a crossing, after giving a hearing, and may apportion the expense of such change. By the same law railways are required to remove trees, etc., which may obstruct the view at a crossing and, by December 1, 1918, to put up standard signs at crossings, as directed by the commission. At crossings designated by the commission as extra hazardous, stop signs must be put up.

This law became effective June 29 without the governor's approval. Another law which became effective in the same way, on the same day, deals with the same general subject. On certification by the Public Utilities Commission to the highway commissioners, the latter must abolish, alter or relocate railway crossings at highways. The highway commissioners must remove trees, etc., for 300 ft. on each side of grade crossings, outside of cities and villages; and at extra hazardous crossings are required to erect signs 300 ft. from the crossings, in accordance with orders of the Utilities Commission. Automobiles must approach crossings at not more than 10 miles an hour; and if there is a stop sign, must be brought to a full stop; penalty for disobedience, not over $10.

Illinois has amended the act of 1905 so as to exempt narrow-gage railways from certain provisions of the law requiring automatic couplers, air brakes, etc.

Pennsylvania has authorized corporations to continue the salaries of employees who enroll in the military or naval service of the United States or of any state. Another Pennsylvania law authorizes railways to construct such branches as their directors may deem necessary.

Further Railway Restrictions in England—The English traveling public is threatened with a further reduction of railway facilities next month, for the exigencies of the military situation have compelled the railway authorities to adopt restricted services. The revision of the services is being delayed until September in order to afford facilities to the public to take a reasonable summer holiday.

HOWARD G. KELLEY

Howard G. Kelley, vice-president in charge of operation, maintenance and construction of the Grand Trunk System, has been elected president of the Grand Trunk and Grand Trunk Pacific, succeeding E. J. Chamberlain, retired. Mr. Kelley has been vice-president since 1911, prior to which he was chief engineer. In the account of Mr. Chamberlain's work on the Grand Trunk, which appears elsewhere in this issue, mention is made of the very difficult situation which now faces the Grand Trunk and Grand Trunk Pacific. Mr. Kelley has the reputation of being an indefatigable worker, very strong physically as well as strong in his opinions and in his actions. He brings to the difficult task that faces the president of the Grand Trunk and Grand Trunk Pacific, energy, determination and driving power.

There are various possibilities which have to be faced. The Canadian government may take over both the Canadian Northern and the Grand Trunk Pacific. In that case the responsibility for protecting the security holders of the Grand Trunk, while in theory resting on the board of directors, will largely, in fact, rest on the president, since many of the directors are residents of England. If, as has been rumored, the Canadian government were to take over the Canadian Northern, but not the Grand Trunk Pacific, then there would be the extremely difficult problem of operating the Grand Trunk Pacific and the Grand Trunk, separated as they are by the distance between Winnipeg and Chicago, in such a way as to make a profitable system. Such a problem would tax the ability of the best railroad men that either Canada or the States have produced.

H. G. Kelley

Howard G. Kelley was born January 12, 1858, at Philadelphia, Pa. He graduated from the Polytechnic College of Pennsylvania and began railroad work in 1881 as assistant engineer on location and construction on the Northern Pacific. In 1884 he left the Northern Pacific, engaging in mining, and three years later went to the St. Louis Southwestern as resident engineer and superintendent of bridges and buildings. His jurisdiction extended over the St. Louis Southwestern in Texas and the Tyler Southeastern. Two years later he was made chief engineer. On March 1, 1898, he became consulting engineer of the St. Louis Southwestern and also chief engineer of the Minneapolis & St. Louis. On July 4, 1907, Mr. Kelley was appointed chief engineer of the Grand Trunk System and on October 1, 1911, was appointed vice-president in charge of construction, operation and maintenance. Mr. Kelley was president of the American Railway Engineering and Maintenance of Way Association from March, 1905, to March, 1907.

BRITISH UNION'S RAILWAY STOCK.—The railway stock held by the National Union of Railwaymen is officially valued at £36,702 ($178,375).

RED CROSS REFRESHMENTS FOR TROOPS ON WAY TO CAMP

Secretary of War Baker has requested Henry P. Davison, chairman of the Red Cross War Council, to arrange that Red Cross chapters throughout the United States co-operate with the War Department in providing for the comfort of the troops while en route from their homes to camps and cantonments. The Red Cross immediately wired directions to its division managers to instruct chapters to take immediate steps to supply the necessary food, drinkables, and other refreshments.

The Secretary of War has directed that accredited representatives of the Red Cross be informed of the movement of troop trains, in order that at points where trains stop chapters may be able to see to it that comfort of the men is cared for; and also that in the event of accident or delay at any unusual point measures may be taken to provide food and refreshments for the men. The Red Cross had already issued to its chapters a model plan for the organization of refreshment units. Chapters are thus prepared immediately to undertake the provision of the proper equipment.

The equipment for a single refreshment unit provides enough coffee, for instance, for 1,200 men. Meals suggested consist of coffee, sandwiches, sausages, and cold beef, with buns or pies. In the case of hot weather, ice tea is expected to take the place of coffee. Special preparations will be made for sick and wounded. It is expected that at every important junction point or place where men are to be transferred or detrain the Red Cross will provide stationary canteens.

TRADE BETWEEN GREAT BRITAIN AND BELGIUM.—The British government has appointed a committee to investigate the means of promotion and advancement of trade and commerce between the British Empire and Belgium. One of the members of the committee is Mr. Frank Potter, general manager of the Great Western Railway, who represents the Railway Executive Committee.

AN INDIAN RAILWAY ACCIDENT.—An unusual accident occurred last month to a mixed train on the Kohat Thal Railway between Doaba, India, and Kahi. The train, which consisted of seven third-class cars, one composite, and two brake vans, on going round a bend was struck by a very violent storm which upset the whole of it, the engine alone remaining on the metals. As soon as it was possible, the engine was cut off and it ran into Kahi for assistance. Two third-class passengers were killed and five injured. No great damage was done to stock or permanent way. The storm was reported to be extremely violent. The engineman was trying his best to get into a cutting for protection, but the train was blown over before he could reach it.—*The Engineer, London.*

FUEL ECONOMY FROM AN OPERATING VIEWPOINT

By Mark H. Reasoner

Heretofore much stress has been placed by mechanical men on fuel supervision and fuel supervisors and regularly organized fuel departments. This is only reasonable, but without support from operating officers and a definitely outlined program of duties for the latter much may be lost that might otherwise be gained by co-operation.

Naturally the organization of a fuel department pre-supposes that it will act as a buffer and an intermediary between the operating, purchasing and mechanical departments without undue absorption of the energies of any one department. The fuel department's representative should be of sufficient importance in the affairs of the road to merit the confidence of the operating officers and should have education, address, poise and the ability to convince the most skeptical superintendent or purchasing agent that his methods and data are sound. This is particularly true in the matter of bringing the results of tests to the attention of these officials. Test bureaus, though often doubted, secure correct results and the cost of their maintenance, while large, is many times repaid in indirect savings.

The operating department, since it is the one that consumes the coal, should confer with the fuel bureau, or the purchasing bureau, and co-operate in a friendly way in confirming the results of tests and in advising as to the best fuel to purchase. It should also endeavor to analyze the car supply and facilities for moving the fuel to conform to the best interests of the fuel bureau. The superintendent who checks overtime freight handling and yard efficiency and then falls down on his fuel checks is indeed lax. But in order to do this he must depend on the aides on his staff—the trainmasters, chief despatchers, master mechanic and fuel accountant.

How the Trainmaster Can Help

The trainmaster by his personal contact with enginemen, firemen, hostlers and coalers is especially in a position to correct any bad conditions as they occur and at least make a report of them to his superior officer.

In the movement of trains the trainmaster has an especially wide responsibility in his relation to coal consumption, in that he is in a position to start trains and keep them moving. If more trainmasters realized just what this means to the fuel performance sheet they would be as keenly interested in it as in the overtime statement. A careful check on this feature and a check of the train lists to ascertain if trains are properly made up in order to avoid an undue number of set outs and switching movements would reduce delays and effect a subsequent marked fuel saving. In this the train despatcher is equally guilty of negligence.

The Despatcher's Responsibility

The despatcher should watch his trains and can save fuel in the judicious calling of crews; saving 10 and 15 minutes on the calls of crews to work in the course of a month leaves much coal on the pile unburned. He too often starts tonnage drags on the road which meet and are held up frequently by locals switching and doing way work at stations. At least two hundred pounds of coal is consumed for every stop or slow down of these big trains. A dozen such stops will waste at least a ton of coal, all of which could have been saved had the despatcher been on the alert. The location of some water tanks and stopping for crossings all tend to waste the coal supply.

The despatcher in his choice of meeting points can be a fuel economist of no mean order, or on the other hand can be a rank waster. Local and through passenger trains had better be "put in the hole" than to force a 4,000-ton drag to slow down, stop, or saw-bye. It saves coal, drawbars, overtime and temper. The despatcher can pick his order points with care and put his orders out at regular stops, making delivery of them while regular station work is being done; much fuel may be saved thereby.

The despatcher in his watching of yardmasters and agents can inoculate them with the germ of fuel economy.

The yardmaster can regulate the switch movement, especially in classification yards, and in the matter of doubling over with long cuts of cars when making up trains.

In the northwest, days come when a 70-mile wind and a 45 deg. below zero temperature absolutely preclude the handling of tonnage in a satisfactory manner over some of the prairie divisions. If such trains are set back and ordered for a start just after sun set and a night run is made behind the plows they can generally be moved in good shape with marked economy of handling.

The Master Mechanic

The master mechanic, the third of the superintendent's aides, can materially help the operating department and especially the ordering of power. The two departments should have a friendly and perfect understanding as to when such power is to be used, because the mechanical department should have all the time necessary to complete repairs. Much fuel may be wasted by getting up steam earlier than necessary.

In these days when overtime forms such an important factor in wages, trains are often ordered out later than intended due to some unforeseen minor repairs not being made by the mechanical department; an outgoing train may thus be blocked in the yard because of being on an opposing passenger train's time. This makes terminal delay, fuel waste and often overtime.

Fuel Accountant

The last aide to the superintendent in fuel economy is a man who on most roads is out of the superintendent's jurisdiction. The fuel accountant is often practically an unknown personnage in the operating affairs of the road as compared to his brother, the timekeeper. The fuel accountant has been more or less suppressed, but he is called upon to distribute and account for one of the largest bills in the road's expense account. In the past he has not been encouraged to participate in the staff proceedings and has in many cases fallen into a rut, living from one monthly balance sheet to the next. If he is alert and bright and abreast of his position, he should be able from the figures passing under his eyes daily to notice the locomotives and engineers that consume coal in excessively large amounts. He can note how and where the engines coal, the kinds of coal they take and the use or misuse of equipment in hauling it from the mines. The fuel accountant should take a week's trip over the division at least three times a year and become personally acquainted with the men and facilities. Nothing will broaden the office man so much and increase his value in the organization more than the personal touch and a knowledge of actual working conditions.

Most of our railroads are operating today under the divisional system and the superintendent who appreciates the saving of fuel and what it means, its direct bearing on operating cost, and its many possibilities can and will get results and a large saving, though if he does not insist on his subordinates doing the same, the chances are that his efforts will be a failure. The question of fuel economy is not entirely one for chemists, inspectors, scale men or fuel supervisors; real fuel economy to be effective must start first with the purchase of the proper fuel and then should be carefully followed by the operating department, personified by the division superintendent.

EDSON J. CHAMBERLIN

E. J. Chamberlin has retired from the presidency of the Grand Trunk and has been succeeded by Howard G. Kelley, vice-president. Mr. Chamberlin went to the Grand Trunk Pacific as vice-president and general manager in 1909 and when Charles M. Hays, president of the Grand Trunk, lost his life in the Titanic disaster in 1912, Mr. Chamberlin was made president both of the Grand Trunk and the Grand Trunk Pacific. During the entire five years of Mr. Chamberlin's presidency the Grand Trunk and its subsidiary have had, for reasons beyond the control of the management, very hard sledding. At the time of Mr. Hays' death, the Grand Trunk through its controlled line in the United States, the Central of Vermont, was building a line from Palmer, Mass., to Providence, R. I. This involved bitter opposition on the part of the New York, New Haven & Hartford. The late Charles M. Hays was a strong man and a fighter. His confidence in himself was great and he carried within himself the plans for continuing the fight and getting the Grand Trunk out of the difficulties in which it had become involved. His sudden death, therefore, made the position of his successor extremely difficult.

E. J. Chamberlin

E. J. Chamberlin was a very different type of man than his predecessor and his view of the New England situation has been apparently quite different than that of Mr. Hays. His general attitude of co-operation and conciliation has been apparent both in the abandonment of the line to Providence and in his treatment of the difficult questions connected with the relationship between the government and the Grand Trunk Pacific. He showed firm determination, however, in the stand that he took in regard to the National Transcontinental. The Grand Trunk had agreed to take over the National Transcontinental, which is the eastern extension of the Grand Trunk Pacific, and to pay a certain percentage of the cost of building the line. The Canadian government built the National Transcontinental through contractors, but when the time came for the Grand Trunk to take over this line, the costs were so high that the Grand Trunk refused to pay its percentage of them. It is understood that Mr. Chamberlin offered to pay a percentage of what would have been a fair cost to build the line. This the government refused to accept.

Mr. Chamberlin's estimate of the extravagant cost of the National Transcontinental was strongly borne out by the report of A. H. Smith, president of the New York Central, in connection with the investigation made by Sir Henry Drayton, W. M. Acworth and Mr. Smith for the Canadian Parliament. The refusal of the Grand Trunk to take over the National Transcontinental left a very difficult situation. The Grand Trunk Pacific, extending west from Winnipeg to the coast, is not earning its fixed charges. The Grand Trunk, extending northeast from Chicago, is not earning sufficient to make up the deficit of the Grand Trunk Pacific, and, furthermore, we have the problem of operating a line which was intended to be a transcontinental, competing with the Canadian Northern, a transcontinental, on the north and the tremendously strong Canadian Pacific on the south, with the middle link of the system missing, or at least operated by someone else.

Mr. Chamberlin has carried the Grand Trunk through a very difficult period and retires now with the friendship of those with whom he has had to deal during this trying time.

Edson J. Chamberlin was born at Lancaster, N. H., and was educated in the Montpelier Methodist Seminary. He began railroad work in 1871 as timekeeper in the car shops of the Central of Vermont at St. Albans, Vt. He worked as clerk in the paymaster's office and clerk in the office of the superintendent of transportation and in 1877 became private secretary to the general manager of the Central Vermont. In April, 1884, he was appointed superintendent of the Ogdensburg & Lake Champlain and the Central of Vermont Line steamers running between Chicago and Ogdensburg. Two years later he was made general manager of the Canada Atlantic, now a part of the Grand Trunk. In 1905 he resigned to do contracting work in Canada and later in South America and Mexico. In 1909 he became vice-president and general manager of the Grand Trunk Pacific and as previously mentioned succeeded Charles M. Hays as president of the Grand Trunk and Grand Trunk Pacific in 1912.

SIR ERIC GEDDES ON RAILWAYS AT THE FRONT.—Sir Eric Geddes, First Lord of the Admiralty, recently made his maiden public speech at Cambridge before an assembly of his constituents. He said, in part: "The railwaymen of England I hold in the highest regard, and that regard has been intensified by what I have seen of their work in France. The railwaymen out there have given movement to the army. Railways are now ahead of the guns everywhere—(cheers)—and the work of the railwaymen has saved thousands and thousands of lives at the sacrifice of many of their own. I have been asked to tell you about myself. There is not much to tell. What little politics I had I have forgotten in the munition factories, in France, in the dockyards, and with the fleets. Before the war I had done soldiering in India. At the beginning of the war, at Lord Kitchener's request, I raised and commanded one of the finest pioneer battalions that ever went to France. I went to the War Office and had a hand at most things there, except shell production. Then I went to France. It was what I saw in France that gave me my determination that nothing mattered but to go on with the war to the end. To one who has witnessed the wreckage of the most malicious retreat in the history of the world, the sole thing that matters is to go on with the war to destroy the German military power.

SLIDING SCALE OF PAY FOR SALARIED EMPLOYEES

By S. B. Pugh

Railroads frequently have vacancies in the ranks of stationmen, warehousemen, baggagemen and clerks for which, in many instances, they are unable to secure candidates possessing previous railroad experience. This makes it necessary for them to employ an inexperienced person and require the agent, together with some of the other employees at the station, to break him in.

The salaries of all regular positions at a station, of course, are based on the minimum wage for which the services of a man experienced in that particular branch of the business can be secured. When the company is obliged to engage the services of a man without previous railroad experience—who usually resides in the community adjacent to the station where the vacancy exists, and is usually a young man living at home with his parents—his services are invariably obtainable, to start with, at a rate of compensation below the recognized salary of the position. In order to obtain this inexperienced young man, however, at the decreased rate, he ought to be made acquainted with the fact that, as his services become valuable to the company, his salary will be increased on a sliding scale until the maximum salary for the position is attained.

In the interest of economy and efficiency division officers should be given blanket authority to fill such vacancies—when necessary to employ those who do not possess previous railroad experience—at a rate deemed by the employing officer commensurate with the applicant's capabilities. This should be done, however, with the unfaltering understanding that they may increase the salary from time to time as considered consistent, the rate not to, of course, at any time exceed the regularly authorized rate of pay for any specific position. It will be necessary that the employing officer have authority to promise and substantiate these periodical increases without either the necessity of submitting or the necessity of securing the approval of any customary form covering changes in payrolls.

By the inauguration of this sliding-scale system, considerable money can be saved to the company, and the employee taken into the service will be better satisfied, due to the systematic remunerative recognition which he has been promised as his experience and efficiency increases. Furthermore, this system will make the experienced employees realize that their services are appreciated much more than were an inexperienced employee taken into the service and placed along side of them at the same rate usually paid for an experienced man. It is incumbent upon the other employees at the station to educate the beginner, and assist him until he becomes capable of handling the work. As soon as the inexperienced employee is taken into the service at a lower scale of wages than his fellow workers received at the same task, the men already in the service are immediately encouraged, as it is evident to them that the company places a premium upon their experience. This encouragement will be reflected by the increased interest they take in the performance of their duties.

For illustrative purposes, let us take a specific station where the rate of pay for warehousemen is $75 a month. The railroad on which this station is located is, the greater portion of the time, able to secure the services of an experienced warehouseman at that fixed rate of pay, but occasionally it is unable to do so and, not desiring to increase the salary of the position, it is considered advisable to employ a young man inexperienced in railroad work. This young man is furnished transportation to division headquarters for the purpose of an interview with the division officer delegated to employ station forces. The young man is told during such interview that the company is willing to start him in the railroad business, but naturally could not afford to pay him the same as it would a man of several years' experience. The company is willing to start him in the position at a salary of $50 a month, and if he proves satisfactory, he will be increased at the rate of $5 every four or six months, until the rate of pay reaches $75 a month, the amount the company can consistently pay for the services of an A-1 experienced man in the position. In some instances it may be necessary to shorten the period of time between such increases, but in no case would the eventual rate exceed the present fixed rate for the position (except, of course, by formal approval of the customary form covering changes in payrolls).

It is necessary that the employing officer shall have blanket authority to promise and substantiate the periodical increases as the applicant's services warrant, which obligation it is necessary to assume at the time of employment as an incentive for the candidate to accept the position at the low rate of pay, which in many instances would be a lower wage than he could earn elsewhere in a line of employment in which he has had previous experience. If the employing officer does not possess this blanket authority to incur these obligations, and is obliged to prepare and submit for approval the regular form to cover changes in payrolls, regardless of the nature of his understanding with his principals, his formal request for increase in salary at times may either be delayed or declined temporarily, owing to some unforeseen condition which may arise at any time, thereby establishing a reputation of insincerity for the company and the division officers in the community served by the line, and retarding, if not making impossible, further promulgation of the sliding-scale system.

Incidentally the same system should be applied in division offices. When the chief clerk of a division office is obliged to employ an inexperienced clerk, he should be in a position to place him under this same sliding-scale plan.

This sliding-scale system means a considerable reduction in the overhead expenses of the railroad, but in addition to this saving in expenses, the most redeeming feature of the system must not be lost sight of; namely, the fact that it enables the railroad to secure that efficient and loyal service which is only obtainable—almost regardless of supervision and scrutinization—from the employee who is furnished an incentive for the creation of ambition, and who is acquainted with the fact that an exertion of his best efforts will receive monetary recognition. The necessity of some such attractive system for the encouragement of unorganized salaried employees is more in evidence since a state of war exists in this country which has resulted in much more alluring and entertaining wages being offered by manufacturers and others, and the marked reduction in the material available for railroad office positions.

This sliding-scale system is in effect in the general offices of one of the large trans-continental railroads at the present time, with the exception that the money saved by the filling of a vacancy (whether by experienced or inexperienced person) at a lesser salary than previously paid, is distributed among such employees in the office force as merit warrants; it has been productive of the formation of one of the most faithful and efficiently organized office forces in the country.

TUNNELS ON THE NEW AFRICAN LINE.—There will be four long tunnels on the new railway deviation in Natal between Maritzburg and Durban. The Delville tunnel will be 970 yards in length, the Barrier tunnel 962 yards, the Eldorado tunnel 374 yards and the Manzine tunnel 400 yards. The new line will be 300 yards longer than the existing route, but great benefit will accrue as the result of improved gradients and curves.

A Study of the Design of Docks and Wharves*

A Discussion of the Considerations Involved in the Location and Construction of These Special Facilities

By W. H. Hoyt
Assistant Chief Engineer, Duluth, Missabe & Northern, Duluth, Minn.

IN conceiving the general plan or scheme of a dock, wharf or waterfront improvement, the character of the service to be rendered or the mission of the completed property is of first importance. A dock and wharf is a means to an end. Except as the means determines the operating cost, the choice of the means is of less importance than the accomplishment of the ends. That plan which accomplishes the end with the lowest cost per year is the most economical. We must include in the cost per year charges which will secure all original invested capital. Each kind of business or service has its own peculiar requirements which call for appropriate qualities in the character of the dock and wharf.

General Conditions Governing Location

If the dock is considered as being the water basin adjacent to the wharf and serving the purpose of giving approach to the wharf for appropriate vessels, it partakes of the qualities of any sea road, that is, sufficient room to maneuver the boats with ease and dispatch, including boats of the present and future increased size and sufficient frontage on the wharf to accommodate the required number of vessels with a depth to float loaded vessels of the present draft and future design. Consideration must be given to allowing space enough for maintenance and dredging operations if the conditions are liable to cause changes in the depth of water. The vessels inside the dock should not be exposed unnecessarily to rough water, and if possible the plan should be such as to secure favorable conditions at the entrance for boats during rough weather and various phases of the tide.

In some cases the dock may be constructed on the line of two adjacent properties of different ownership, the dock area chosen being sufficient to serve both properties. The total area thus devoted to water surface may be less than the area required if both parties were to build separate docks. Dock property, which includes the land under the water, available for construction of both the dock and wharf, has risen in value in recent years and economy in the plan which will minimize the area wasted in waterway is greatly to be desired. Community developments of dock property are very important. The United States Government has spent large sums of money in developing harbors and approaches thereto and will continue to do so. This cost is borne indirectly by all and economy in the use of the frontages on these harbors will lessen the total amount required to be spent on harbor development, besides producing the greatest returns to each individual property. Sometimes the dock work is reduced to a minimum because the necessary service is secured by a pier run out into deep water.

The general scheme of a wharf will often be started with limitations of property available either because of prohibitive cost or the finished development of adjoining property by other owners. The shape of parcels of water front property is more liable to be irregular than regular, sometimes approaching the square, at other times a long strip between other strips. Sometimes when the shape is suitable, the approach is unsatisfactory because of developments of industries and surrounding communities. The facility of approach with railroad tracks, complications of manufacturing and improved properties, and the general natural layout of the ground over which the approaching railroads are to operate, may alter the general conception materially. These predetermined conditions may force unsatisfactory arrangements, but care must be given to eliminate constrictions at any point on the approach which will develop neck-of-the-bottle effects and limit the full use of the property.

Changes in value of real estate and dock property should be considered. Property may become too valuable for use as orginally intended and require a change to justify the interest charge which is always to be governed by present values.

Consideration of Traffic to be Handled

If the plant is to accommodate passenger service, its arrangement as to safety and convenience should be given careful attention. Ease of transferring passengers from trains or from land approaches to floating equipment and ample room for allowing rapid and safe movements, are factors which will largely control the general conception, as will also the passenger service, whether ocean-going, long voyages or short-voyage ferry service. The character and number of passengers handled influence the weight to be given to convenience and comfort. As passenger service comes in contact with human and psychological factors it requires a higher state of perfection, dependability and safety, especially so if in competition.

If the service is that of handling freight there are even more factors arising which will influence the arrangement. To handle miscellaneous package freight, its adaptability to the use of loading and unloading machinery and to the movements of freight from floating to rolling equipment, or vice versa, must be considered. To handle bulk freight such as coal and iron ore either from boats to docks or from stock piles, docks or cars to floating equipment requires an entirely different class of structures from that designed to handle package freight exclusively. The former may be exposed to the weather while the latter may require protection of warehouses. The character and weight of freight affect the storage and working areas required.

The character of the boats, whether ocean, lake, canal or river-going, whether they are standardized and whether they are equipped with freight-handling machinery, has a very important bearing on the wharf requirements. Great Lake boats for ore, grain and coal carrying are fairly well standardized. Canal service tends to standardization. Ocean-going vessels are more varied in character. Labor conditions and whether men are transient or stable influence the amount of machinery required for handling freight.

Other Considerations

At present the tendency toward government ownership and control may influence the amount of the expenditure to be made. In case of a transfer of ownership a permanent structure would bring a larger proportion of returns than one of temporary character. On the other hand, other conditions of public sentiment may tend to heavy taxation of the corporation and its property and thus the advantages to be gained by expending money in permanent construction would be offset by the additional taxes on such property. The fire hazard and insurance rate on property of this kind

* Abstracted from Bulletin 197 of the American Railway Engineering Association.

is very important. If located in the immediate vicinity of structures whose materials increase the fire hazard, fire resistant construction would be advisable. Rates of insurance in different localities should be considered carefully.

The height of the structure is often determined by its location on a shore line subject to rise and fall of the water due to tides, wind action or flood conditions of a river. The action of salt water upon different structural materials, the climatic and atmospheric conditions, decay and deterioration due to marine growths, the violence of wave action, the general prevalence of storm conditions, and ice accumulation will all have their influence on the choice of materials. The life of wood commonly used in each locality is a factor in the choice of timber or some more permanent form of structure.

The foundation details are variously affected by the character of the soil upon which the structure is to rest. A soft alluvial deposit or sand will often require very long piles, while if rock bottom may be reached without great expense, cribs or piers may be constructed economically. River or stream flow may wash out foundations or fill up adjacent docks. The season of the year when a wharf may be started might determine the character of construction chosen.

In most of our harbors conditions imposed by the general layout of the government harbor lines affect the general shape of the work. Where the government harbor lines are laid out far from the natural shore line, construction will develop into long and slender wharves, while if the harbor lines are close in shore, structures will develop into broad and probably filled docks. If the adjacent channels have not been developed to their final form by government decision, it might be unwise to adopt permanent construction. Sometimes riparian rights have not been settled by court decisions and permanence of legal rights should precede permanence of construction.

Business and economic conditions have a most important part in the design of a wharf. For instance, a lumber wharf built in a country where the timber business will last only 10 or 15 years will suggest a cheap first cost, while a structure to handle package or bulk freight serving ocean liners would naturally suggest permanent design. The volume of business to be handled at the dock, its rush times at certain seasons of the year, its possibility of increased growth or change of character of shipments may also develop a special design. The principle of obsolescence places limits on the investment even if no other limit comes in.

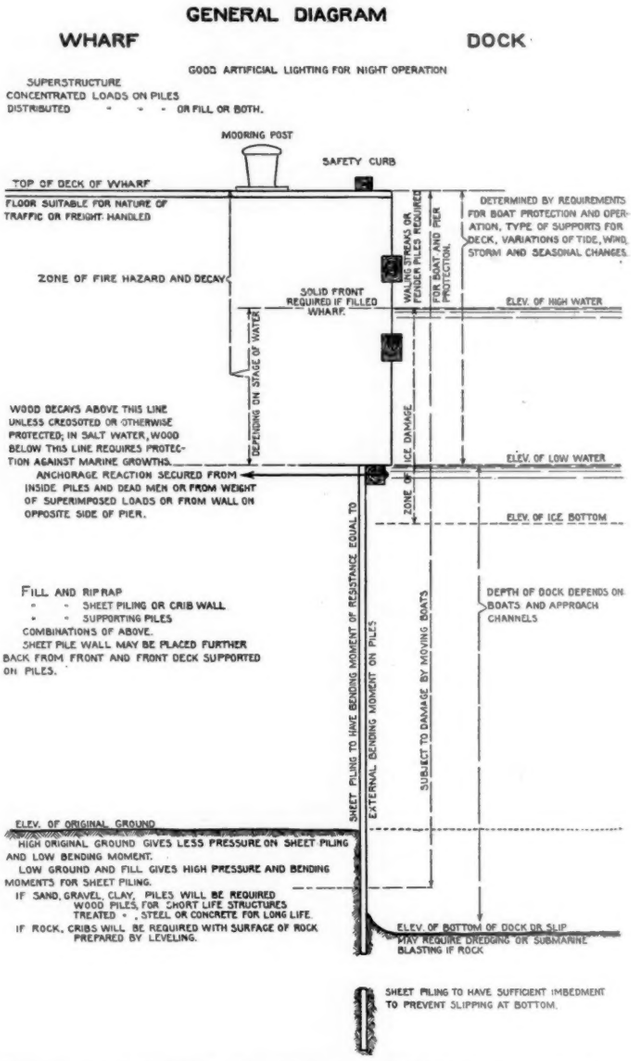
Many times judgment on general layouts will be made on the visible and self-evident factors, but the indirect and intangible things may be of greater value, as, for instance, the principle that the breakdown or loss of service of a part of the whole train or sequence of operation may entail loss of many times the cost of permanent construction in the loss of time of the rest of the machine, which may mean delay of all correlated transportation.

The item of maintenance cost is very important. Even at the present prices it may be the deciding factor, but with the upward tendency in the price of materials, repairs may run into larger sums than first contemplated and so balance the increased cost and interest on better structures. Maintenance costs vary through difference in the thoroughness of the system of maintenance, prompt repair oftentimes saving greater losses.

The Design of the Substructure

Any substructure may be divided into elements as indicated by the diagram and notations thereon. The critical region where the greatest variation in design and construction occurs is that next to the dock basin or the part of the wharf which comes closest to the boats, for here we find a variety of forces and requirements. The vertical loads are carried by piling, sheet piling, crib walls and fills. The horizontal pressures, where they exist, are carried by sheet piling or crib walls. Boat impact and mooring stresses are usually carried by the structure as a whole.

Of the faults in the foundation uneven settlement is worse than uniform settlement because it sets up destructive stresses in the superstructure. Therefore, if settlement seems unavoidable, attention should be given to keeping it as nearly uniform as possible. This can be attained by using a uniform system of support. One of the most common causes of failure, and perhaps the most common defect in dock foundation construction, is the improper spacing of the supporting piling. The tendency is to space piling more or less uniformly throughout the structure with utter disregard of the



Summary of General Considerations Which Govern Design of Docks and Wharves

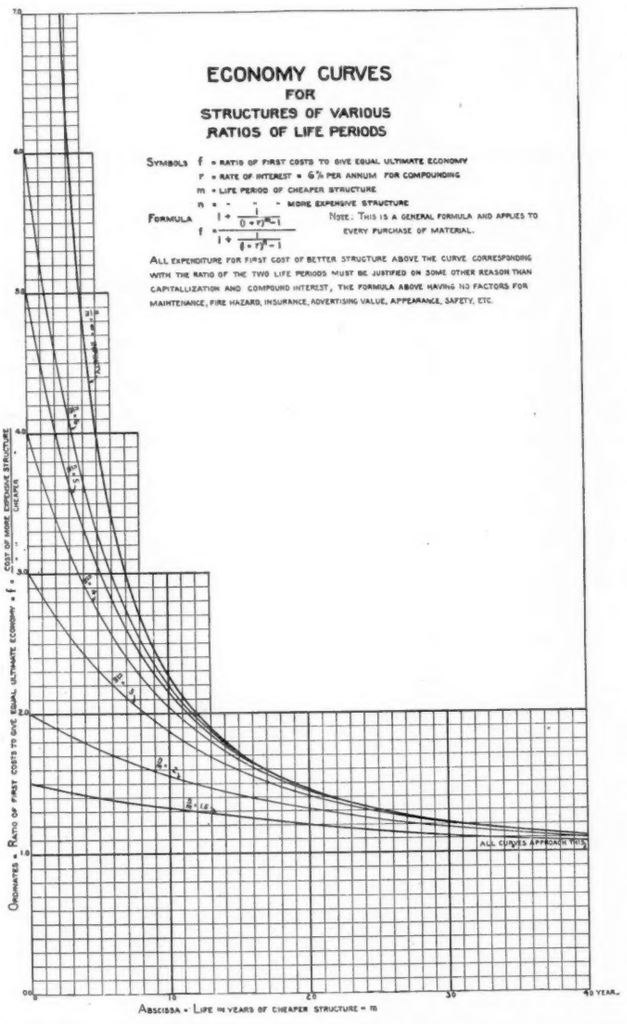
unequal distribution of load. Often the parts of the dock carrying no load at all are supported by the same distribution of piling as the part of the structure carrying the maximum loads. Piles should be so placed as to receive uniform loading for each pile.

By far the greater number of all docks yet built or being built in this country are designed with wooden piling to carry their loads. In many cases they are being surmounted above water line by concrete piers either with or without timber grillage. It is becoming more and more the practice at the present time to use treated timber and treated

piling in all work subject to destruction by the teredo or other form of marine borers.

Where piling is driven in very deep water and future plans contemplate permanent filling of the dock, it is often good practice to fill in around the piling to a certain depth with rubble stone, thus stiffening the foundation and causing less damage to buildings and structures due to the shock of berthing boats. Some structures are surrounded by timber sheet piling well anchored back with steel rods and the wharf is then filled to the required height. A few have already used steel sheet piling for this purpose, thereby obtaining a very permanent foundation.

During the past a great many docks have been constructed of timber cribs sunk along the dock line without placing



Economy Curves for Temporary and Permanent Forms of Construction

piling or other permanent forms of support under them. These structures have been very unsatisfactory. They have caused trouble by settling under load, and by being overturned toward deep water easily whenever it became necessary to deepen channels. This practice has been almost entirely abandoned, and it is now recognized that filled cribs should never be placed except upon solid unyielding foundations. Where the improvement will warrant the expenditure, the use of some form of steel sheet piling is very satisfactory, and its use will, doubtless, be increased very greatly in the future.

The present depth of channel as well as the depth that may be required in the future should be given careful consideration. If the structure is one to be used a long time its future improvement by changing a timber foundation to one of more permanent design of concrete and steel must be considered.

Filling behind sheet piling or in cribs should be distributed uniformly and in horizontal layers. Sheet piling walls and cribs should be tight so as to retain all the fill permanently. Cribs should rest fairly on suitably prepared bottom. Ample allowance for strength in the foundation for all loads and forces which may come on the wharf and prevention of overloading later is the best way to minimize settlements.

When a boat strikes a wharf or pier the damage done will depend on the size of the boat, its speed, its material, and on the mass of the pier, its fender system and its material. The designer must consider where he wishes to direct the damage or the cost of maintenance. There are two systems directly opposed in principle. The first is to build of materials of such elasticity and make up as will absorb the average service blows with very small damage. Usually this takes the form of elaborate timber framing with fender piles, sometimes backed with coil springs. The exposed points are usually protected with large groups of closely-driven piles. However, this protection fails with a square blow of a vessel under headway and usually results in expensive damage to the pier.

The other system is to build of simple concrete masses or reinforced concrete of such amount and rigidity that boats strike the pier at their own peril. Here a premium is put on solidity and mass. Vessels can and do much damage even to these structures, but greater damage is usually sustained by the boat. This tends to increase the skill and diligence of the captains, lessening the frequency of such accidents and usually leaving the structure in a shape to be easily repaired after a destructive blow. Such structures usually only have a rubbing waling strip of oak timber or fender pads of 12-in. by 12-in. timber hung over the side. Timber piers usually are not adapted to the second system because they are lacking in mass and rigidity, hence some form of the first system is used.

Where passenger service is rendered by the pier, the second system is not advisable because of the effect of a smashing blow of impact with the pier on a large crowd of people on the boat. Rightly here practice has developed elaborate systems of cushioning the blow and letting the damage be done to the dock.

The case of a submerged wall with water on both sides where filling is put in back may lead to a little confusion. If the water stands at the same level on both sides of the wall the hydrostatic pressures are balanced. The material filled in back of the wall usually weighs more than water, even after allowing for the buoyant effect of the water. This gives an added pressure on the side of the wall equal to the horizontal pressure of that material with its slope angle of repose under water and its reduced weight. The effect of the water is to decrease the angle of repose of the material and the effective weight. Decreasing the angle of repose increases the horizontal pressure and decreasing the effective weight lessens the horizontal pressure. If the material lies fair against the wall so that the hydrostatic pressure has no area to press against, the effective hydrostatic pressure on the inside of the wall will be zero, but in practice a film of water will lie next to the wall except at a few points which transmit the pressure of the filling itself.

Piling, piers and original ground which stands at greater heights than the bottom of the adjacent channel tend to reduce the pressure exerted against the inside of the wall. The amount of the reduction is a subject for careful judgment in each case. Because of this reduction, it is some-

times possible to leave out intermediate supports on sheet piling, using only secure anchorages at the top and a sufficient length of imbedment at the bottom.

In the early days of wharf building the driving of a strong pile sticking up through the deck three or four feet formed a satisfactory mooring post when boats were smaller and the attaching lines had a horizontal pull, but with the increase in the size and height of vessels which mean a high inclination of the rope with a tendency to slip off the old straight side posts, have come cast-iron posts with various shapes to overcome the slipping. All of these posts require suitable foundations with hold-down bolts to take care of the lift. With the addition of steam winches on the boats to warp them along the piers in loading, it has been found advantageous to have mooring posts at frequent intervals along the front of the pier. It is well also to have a few posts further back from the front to fasten mooring lines at less inclination for such work as pulling the boat closer to the piers. As a matter of safety, it is necessary that some form of curbing or foothold should be provided along the front of the pier for the men receiving the mooring ropes to prevent their slipping and being pulled into the water.

Superstructures Construction

The superstructures of many wharves constructed during the past few years are of a composite character. Timber, concrete and steel are used in various combinations, and there seems to be great diversity of opinion as to the best practice. Timber structures are generally decked by cutting off the piling to the proper level, capping them with standard sized timbers and placing a plank floor, securely spiked to the caps. This form of deck is very satisfactory for wooden structures and, up to the present, on account of the low price of timber, has probably returned more on the investment than would have been produced by any permanent form of construction. In the past few years some designers have placed concrete decks on timber structures and others have used concrete with asphalt wearing surface. It would seem that either of these methods of construction were hardly satisfactory. Concrete or asphalt decks should be placed on filled or permanent structures so they will not deteriorate rapidly from the action of an unstable foundation.

The superstructure of many wharves is of very simple construction, being principally a more or less extensive roof supported upon posts from the foundation. Of late years many fine examples of steel and concrete buildings have been erected and the tendency in all the large shipping centers, at the present time, is to erect structures of this character. The danger of fires and the tremendous loss incident to the destruction of wharves and their contents, as well as the loss that may entail on shipping in the immediate vicinity, has been a very decided factor in producing a permanent form of construction. The constant rise in prices of timber in all forms and the lower prices of steel and concrete is making it more feasible to put up fireproof structures of permanent design.

Economy Curves

The formula for these curves is given with the curves. By assuming that n and m have a fixed ratio and using various life periods, it is possible to calculate values of f for each ratio of life periods and different lengths of life. By plotting these values of f and joining points calculated for the same ratio of life period, we get curves showing values of f for any life period within the limits of the curves. For convenience those of even life ratio were plotted. For any fractional ratio of life period values of f can be found approximately close by interpellation between the appropriate curves. The curves start at zero life and ratios of cost equal to the ratio of life period and approach the ratio one as the life periods lengthen until at infinity $f=$ one, irrespective of the ratio of cost at the start. The curves are calculated with the interest rate at 6 per cent, but the principle would be the same whether we used 3 per cent, 4 per cent, 5 per cent, or 6 per cent except that the higher the rate the more rapidly do the curves fall to the ratio one.

By a study of the curves it will be seen that a larger ratio of first cost is justified for short life structures than for long life structures even if the ratios of life periods are the same. It will be seen that every additional year which we can add to the life of the lesser cost structure lowers the ratio of justified cost of a longer life structure, even though the longer life structure does last the same ratio of life. For example: Treated timber with a life of 25 years and steel of 50 years have a justified cost ratio of only 1.23 and even if we were to get infinite life from the steel a cost ratio of only 1.30 is allowable. This does not prove the steel should not be used, but indicates that where steel is used some other important factor such as maintenance of fire hazard must be the basis for spending a greater amount.

METAL ALLOYS USED IN LOCOMOTIVES*

By G. L. Hoyt
Assistant Professor of Metallurgy, University of Minnesota.

Every railroad man who is concerned with the design of a locomotive knows that heat-treated steel has better properties than annealed steel, for by heat treatment we are able to produce certain properties that can be produced in no other way. I have found, however, in talking with various railroad men, that the chief reason they are not ready to adopt heat-treated parts is that heat-treated steels do not stand up any better than ordinary carbon steels, and that in some cases special steels give more trouble than ordinary carbon steels. The reason given is that the producers of these parts are not in a position to heat-treat material of that quality on a commercial basis to sell for such a price that the railroads can effect an economy in buying. At present the practice is to merely anneal the various parts. A locomotive axle will be forged from an ordinarily good grade of open-hearth steel. After forging it is heated to the critical point and allowed to cool in the air slowly. The object, I take it, is to insure uniformity and to remove internal strains. Whether or not a satisfactory structure is produced is of entirely secondary importance. When I mention internal strains, I give the reason why heat-treated steels are not used generally in locomotive practice. There can be no doubt about the advantages which they possess over ordinary carbon steels, and if it is impossible at present to obtain heat-treated steels for locomotive construction, something should be done about it.

If I can read the signs of the times correctly, there is a necessity for all the economy possible in railroad operation, which is why the question of using heat-treated steels in locomotive construction is becoming more and more important. It is possible to produce steels that far surpass those now entering into locomotive construction. In gun construction the United States Government and the steel plants got together and are now successfully manufacturing heat-treated gun parts. Hadfield projectiles are probably the most difficult to produce satisfactorily of all materials made of steel, the internal strain serving to weaken the resistance of the material. What has been done in other cases can be done in regard to any part about a locomotive. I can see nothing inherently difficult about heat-treating locomotive parts. Whether or not the methods for doing this are developed depends upon the demand made upon the steel plants by the railroads to produce the desired material. If the roads feel that there would be an economy in using heat-treated parts, undoubtedly

*Abstract of a paper read at a meeting of the Minnesota Section of the A. S. M. E.

there would be a great attempt on the part of the steel plants to produce that material.

You may have certain specifications for buying a certain grade of steel, but 30 per cent, elongation, etc., tell almost nothing about the steel, that is, in so far as to whether or not the axle is going to stand up in service, for the tests which are used to bring out the superiority of heat-treated steels are of an entirely different character. Take a locomotive frame, or the axle; its parts are subjected to vibratory strains and stresses. Say that the locomotive axle runs hot, and that it is cooled off with water, ice, or snow, and a crack is started. What is the difference in the effect of a crack in a locomotive axle having a fine-grained structure, and one having a coarse-grained structure? In considering this, the real value of heat treatment is brought out, and it is not shown by ordinary tensile tests. A crack is of much less consequence in the case of softened steel than in the case of annealed steel. Internal strains are eliminated in annealed steel, but the same treatment which produces the fine-grained structure also eliminates internal strains. It is a question of properly conducting the heat treatment, and the trouble is that the steel plants either work carelessly or for some other reason do not take particular pains to properly heat-treat the material. If the railroads as a whole would take up this question and push it as they pushed the question of steel rails a few years ago, I have no doubt but that they would get properly heat-treated steels.

As far as special steels are concerned, the problem is different. Their cost at present is almost prohibitive. Nickel steels, etc., are now in such demand on account of their use in the manufacture of munitions and automobiles that no considerable portion or amount of them can be diverted to such a use as this, and unless they are heat-treated they are not at all worth the additional cost.

When using special steels which have been heat-treated, why do those in charge of locomotive construction insist on using the same designs? A certain part is made of ordinary carbon steel annealed. As an experiment, a railroad will buy that part made out of special steel, heat-treated, and expect to effect an economy. No metallurgist would advise leaving the design the same; if it is correct for carbon steels, it is not correct for special steels. If you leave the cross-section the same, you leave the weight of the section the same, and the price of the heat-treated part consequently seems exorbitant. The management, however, probably takes the stand that it is better to leave the section the same and get the improvement by substituting a good steel, but this does not give a satisfactory basis for comparison.

Another point I want to bring out is the service you can expect from special steel as compared with carbon steel. A locomotive equipped with special-steel heat-treated parts is usually found in the shops as frequently as other locomotives, but the reason is that the heat treatment has not been carefully done. I am convinced of that when being told of the failures of the heat-treated parts.

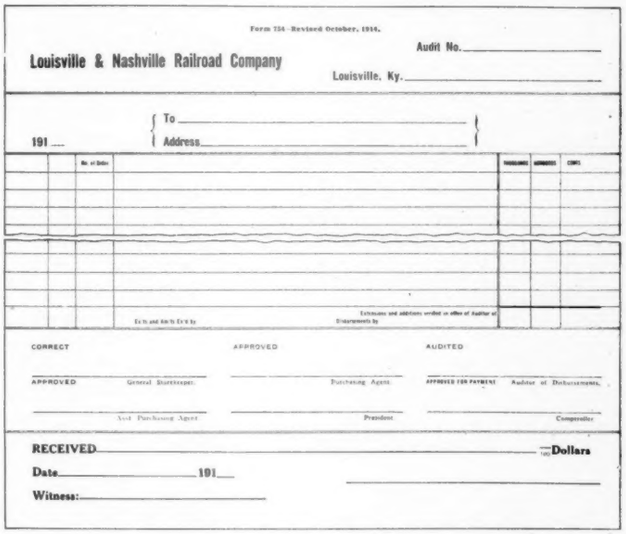
In closing, let me compare the service of annealed carbon steel with the service of special steel properly treated. The carbon steel is ductile and has a certain amount of strength, but in practically every other way it is weak, and particularly so if a flaw develops. The annealed axle shows its weakness when a small crack starts working its way through the axle. It is on account of the large percentage of free iron. One of the worst things that could be done to a steel axle from that point of view would be to anneal it, for this would produce the free iron. One thing that counteracts this is the removal of internal strains. A heat-treated steel axle, whether of carbon or special steel, designed so that it will have the same static strength, if injured in any way has several times the resistance of annealed steel. The heat-treated steel is less apt to be tricky than the annealed steel.

The saving effected by using special steels results chiefly from cutting down the weight of the reciprocating parts; but unless these are designed with the properties of the heat-treated steel in mind, there can be no real comparison drawn. The work done up to the present time does not lead to a reasonable comparison between special and annealed steels, and until that is done properly, we are not in a position to say whether the special steels should be condemned.

A BETTER METHOD FOR HANDLING INVOICES

The handling of invoices and vouchers is not the difficult task on the Louisville & Nashville that it is on most railways. The road has been using for some time a voucher, Form 754, which is made out not in the railroad offices but by the company which sells the supplies. A copy of the voucher is reproduced herewith. The supply company from which the goods are bought, renders invoices in triplicate when the goods are shipped, according to the customary practice. The three copies of the invoice are sent through the usual channels, to be checked by the purchasing agent, the general storekeeper and the division storekeeper.

On most roads the procedure would then be to send the invoice to the auditor of disbursements to be passed for payment. The auditor would then forward the invoice to the office of the comptroller who when he has a number of invoices will make out a voucher and pay the bills. On the Louisville & Nashville, however, the voucher for payment is made out not in the railroad's offices but by the company


Form 754—Revised October, 1916.

Louisville & Nashville Railroad Company

Audit No.

Louisville, Ky.

191 To Address

CORRECT APPROVED AUDITED

APPROVED General Storekeeper. Purchasing Agent. APPROVED FOR PAYMENT Auditor of Disbursements.

Asst. Purchasing Agent President Comptroller

RECEIVED Dollars

Date 191

Witness:

Voucher Used by the Louisville & Nashville

selling the goods. The voucher is rendered at the end of the month and is really a statement of all the invoices sent during the month. It is checked by the purchasing agent, the storekeeper, the auditor of disbursements, etc., and when properly signed and stamped serves as an order on the bank for payment for the month's account. It is banked by the supply company like a check and on its return from the banks is filed in the railroad office for future reference.

The advantages of a scheme of this kind are many. The voucher contains all the bills rendered during the month, and serves as a check at once upon all the invoices that may be outstanding. The account is complete and upon payment is cleaned up entirely. There is no fear of overlooking mislaid invoices, of forgetting invoices in process of being checked, or of invoices being too long delayed for payment. The railway, further, receives at the end of the month a complete record of its bills outstanding, and can easily determine where it stands at all times.

TRAIN HANDLING*

By G. H. Wood

General Air Brake Inspector, Atchison, Topeka & Santa Fe.

To prevent, as far as possible, damaging shocks in long trains, due to brake applications, it is necessary that the percentage of braking power be as nearly uniform as possible on all cars, and that loaded and empty cars be so distributed in trains that the greater part of each will not be at the head end or rear end. It is, of course, not practical generally to alternate loaded and empty cars throughout trains and the best that can be expected in this respect is to place part of the empties ahead and part of them at the rear, placing at least one third of the empties in the head end of the train, and the balance behind the loaded cars. This does not mean that in short trains, say 25 or 30 cars, and where there are only a few empties or loads that this procedure is necessary; but on long trains of 40 cars or more where about one half are loads, it is advisable to place the loads and empties as above suggested. This provides a means of distributing the braking power so that reasonably good handling of the train can be expected.

It is, of course, important that piston travel be properly adjusted on all cars in any train. This feature has been dwelt upon more or less by those concerned in brake maintenance. Long piston travel is preferable to short piston travel, that is, 7 in. standing travel will provide much better handling trains than 5 in. standing travel with the same brake pipe reduction, because in the former case the cylinder pressure will be built up more slowly and consequently any movement of slack in the train will take place proportionately slower, with a reduction in the velocity difference between cars and the stresses set up on account of such; and while there will be a considerable difference in the cylinder pressure between a 5-in. and 7-in. piston travel at the beginning of a brake application, the pressures will be nearly equal when the brake is fully applied. An idea of the shocks produced in trains may be gathered from the following statement:

"It is not infrequent that a velocity difference of one mile per hour is set up between cars at different points in a train, due to grade conditions or loaded and empty cars, during brake applications. With the present standard freight brake, the empty car tends to retard at about three or four times the rate of the fully loaded car, and if a heavy service reduction is made, if the loaded cars are toward the head end of the train, the ordinary slack between cars provides a means of stretching the train to such an extent that the stresses run around 300,000 to 400,000 lb.; hence it becomes plain why a draft gear yoke, capable of sustaining the weight of its own car, or even a number of such cars if suspended vertically, is so easily broken in service; also why so many damaging shocks, due to slack action, occur every day, with the great diversity in car loading, train make-up, grade conditions, brake conditions, etc. However, if a light brake pipe reduction be made the braking force will, of course, be reduced and the velocity difference between cars in the train will be reduced correspondingly, with a corresponding reduction in stresses set up between cars in the train."

You will note that the statement is made that if a light brake pipe reduction instead of a heavy one be made that the braking force will be reduced and the velocity difference between cars will be correspondingly reduced; however, it is assumed in the above case that the piston travel is near 8 in. standing travel, so that it is possible to produce a low cylinder pressure, since with 7 in. piston travel a 10 lb. brake pipe reduction produces 30 lb. cylinder pressure, and a 5-in. piston travel produces 45 lb. cylinder pressure, with the same brake pipe reduction. Note that in the case of the short travel the brake is nearly fully applied, if 70 lb. brake pipe pressure is the standard carried. A 5-lb. brake pipe reduction produces about 7 lb. cylinder pressure with a 7-in. piston travel, and the same reduction with a 5-in. travel produces about 17.5 lb. cylinder pressure. The rate of retardation due to brake applications depending upon the rate at which the brake cylinder pressure can be built up, it will be seen that with short piston travel, say 5-in. or less, a high rate or retardation is possible, because a 10-lb. brake pipe reduction produces 45 lb., a high cylinder pressure. It is true that the longer brake pipe on long trains automatically increases the time in which it is possible to effect any given brake pipe reduction over that obtaining for a short train. At the same time the longer brake pipe increases the time between the beginning of brake application on the head end and rear end. Now if the piston travel is short, say 5 in., it is possible to develop a high brake cylinder pressure at the head end with a 10 lb. reduction before the beginning of brake application at the rear. This causes the slack to run in from the rear, sometimes with very damaging results if the speed is low, because it is possible to produce sufficient braking power on the head end of a long train to stop the head end before the brake application begins at the rear end. This results in a collision between the two ends of the train. However, if the piston travel be long, say 8 or 9-in. standing travel, it is possible to make the same reduction and only produce 20 to 25 lb. cylinder pressure, less than one-half the pressure produced with the short piston travel. This reduces the rate of retardation set up on the head end of the train, and consequently the severity of any slack action due to a run-in of the slack. Lighter brake pipe reductions still further reduce the cylinder pressure developed, until the train can be controlled without any noticeable slack action.

The above serves to show that it is possible for the man engaged in brake maintenance to provide a brake condition that is difficult to handle, and one that contributes to rough handling; or to provide conditions that are quite the reverse, so far as piston travel is concerned; also that the old idea that the piston travel should be very short, to provide a quick acting brake and more braking power for light reductions is entirely wrong for long train operation.

As indicated in the foregoing, the engineman should avoid heavy brake pipe reductions at any one time in handling long trains. He is in a measure at your mercy in this respect, since once the triple valves are moved to service position, any reduction of brake pipe pressure causes a further increase in brake cylinder pressure. The rate of brake pipe loss or reduction due to leakage should be kept as low as possible, and should not exceed 5 lb. per minute after a 15 or 20-lb. brake application from 70-lb. pressure.

Numerous cases of damage in handling trains are traceable to the manner in which the train is operated by train and enginemen; however, cases are recorded where damage occurs due to other influences, and in order that this association may lend its efforts to lessen such cases the car department should be notified promptly of any case of trains leaving the terminals coming uncoupled due to defective drawbars or appliances, or breaking-in-two due to weak or defective draft gear, in order that these matters may be taken up promptly with the head inspectors so that they will realize the importance of doing everything possible to prevent cars coming uncoupled due to mechanical defects. In making up trains, cars having weak or defective draft gear, if not repaired, should be handled toward the rear of trains, and it is important that yardmen be instructed to place cars in the rear of the train when so notified by inspectors or when the cars are properly carded by them.

Any efforts directed toward providing good brake conditions tends to reduce the rough or improper handling with

* From a paper presented before the Car Foremen's Association of Chicago.

a resultant reduction in shocks that contribute to loss and damage.

In order to assist in the inspection of draft gear and brake conditions, and also keep the slack in draft gear at its minimum, freight trains should be stretched on their arrival at all terminals. This requires the incoming brake test to be made as follows:

On stopping the train, where it is to be left in the terminal yard, the brakes should be released and fully charged, sufficient hand brakes should be applied at the rear so that the slack may be gently pulled out on the entire train, after which the air brakes should be applied with at least a 20 lb. service reduction. The brakeman should not close any angle cocks until such application is completed. Inspectors should, of course, be on hand to inspect for brake and draft gear defects as promptly as possible.

Representing a railroad which has some long and heavy grades, I am vitally interested in the question of maintenance of retaining valves on freight cars. Since it may be that some will question the suggestion with regard to avoiding piston travel shorter than 7 in., I wish to state that for grade work if the retaining valve and its connections are kept in proper condition, as they should be, there will be less difficulty in controlling trains on heavy grades than obtains with the short piston travel. Not only this, but with piston travel at 7 in., the roads operating in level territory will have much better handling trains with a consequent lessening of the damage occurring, less trouble due to stuck brakes, and also cracked and slid flat wheels. The question is one that is worthy of considerable thought and also one that should be given a great deal of consideration and attention by those who are directly concerned in the maintenance of brakes.

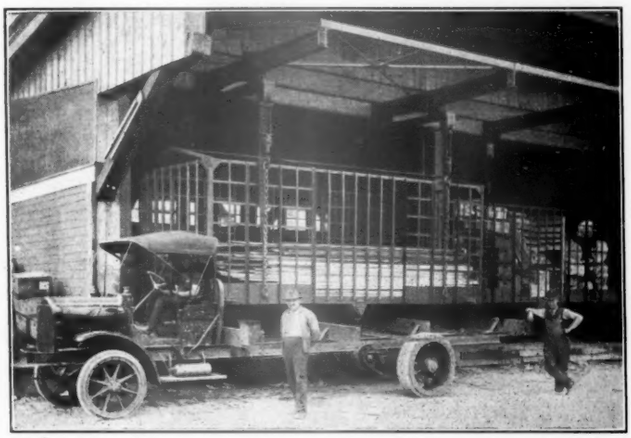
I understand that M. C. B. recommended practice with respect to piston travel is at present 5½ to 7 in. This, however, should be changed, in my opinion, to, from 6 to 8 in., making 7 in. the standard adjustment. I do not wish it understood that I favor a brake condition that will lessen the safety of train operation. On the other hand I am thoroughly convinced that for the operation of long and heavy trains with the pneumatic brake, sooner or later a move in the direction of overcoming the time element inherent in pneumatic brakes will be made. This does not necessarily involve the operation of the brake by electrical means, but rather by timing the application of the brake in its initial stages, thus allowing time for the tremendous forces existing in heavy trains to adjust themselves gradually before a high rate of retardation is produced. This, I feel, is necessary for both the service and the emergency brake application. The nearest approach that can be made to such an installation with present equipment is to maintain the piston travel slightly longer than is the present practice throughout the country. I have for the past several years recommended such a change and understand that at the present time this suggestion is being tried out on various lines, particularly in passenger service, with very satisfactory results. It is much more necessary for freight service, where the trains are so much heavier and consist of a greater number of cars.

ECUADORIAN BONDHOLDERS LOSE SUIT.—Judge Augustus N. Hand, of the Federal District Court of New York, has dismissed the suit brought against Speyer & Company and the United States Mortgage & Trust Company by Erskine Hewitt on behalf of himself and all other bondholders of the Guayaquil & Quito Railway. The action, which was filed on January 2, 1899, was designed to impress a lien upon money in the possession of Speyer & Company. The litigation grew out of contracts made by the government of Ecuador in 1897 and 1898 for the construction of a railroad from the port of Guayaquil, in that country, to Quito.

MOTOR TRUCKS REPLACE TRAP CARS

For about three months the Cleveland, Cincinnati, Chicago & St. Louis has been handling less-than-car-load freight between its sub-stations at Front street, Sixth street, Brighton and Ivorydale and its main station at Central avenue, Cincinnati, by motor trucks in place of trap cars. These motor trucks have been installed to release the freight cars now in this service for main line use; to increase the present station rail facilities; to increase the capacity of the present freight house by securing a more continuous movement of freight at the main and sub-stations and to decrease the liability for loss and damage.

The equipment in this service which has been installed jointly by the Motor Terminals Company and the railroad consists of one 5-ton White motor truck chassis, nine removable truck bodies with a capacity of 5 tons each, 12 sets of lifting chain hoists and five overhead superstructures. The plan of operation is to distribute these movable truck bodies at each of the four sub-stations and the main station. In outbound service they are spotted on the floor of the freight house or left suspended under the super-structure in the drive way so that freight can be loaded directly on them by the shipper instead of being placed on the station floor. In this way the rehandling of the freight over the floor to the out-bound car is eliminated. With in-bound traffic the



Motor Truck Chassis With Removable Truck Body and Chain Hoists

freight is trucked directly from the car in which it arrives over the platform into the truck body for the proper sub-station. When these truck bodies are loaded they are ready for movement at once over the streets to the main or sub-stations.

After a truck body is loaded and ready for shipment, an average of only five minutes is required to transfer it to and from the motor truck chassis. With this arrangement the motor truck can be employed continuously in transferring these bodies with their contents from one freight house to another. In this way the single truck has handled as much as 84 tons of freight in one day. The average load of each truck body is 4.55 tons. Investigation showed that trap car movements require an average of 1½ days while with this system of motor transportation the haul of a trap car load of 9 tons of freight within a 9½ mile radius and with an average haul of 3 miles is made in 1 hour and 24 minutes.

The use of this system of freight transference has resulted in advancing trap car freight movement 24 hours, as 88.4 per cent of this trap car freight reaches the main station in time for loading into line cars the same day or is delivered to the sub-stations in time for delivery to the

consignee. It has also made available for other service eight trap cars daily and has eliminated the expense of switching these cars. It is estimated that the floor capacity of the stations has been increased 4,860 sq. ft. or 40.8 per cent. The rehandling of the freight passing through these stations has also been reduced over 50 per cent daily.

In estimating the cost of this service as compared with trap cars the contract price per ton of freight handled, the labor cost for truckers and operators and the interest and depreciation on the investment in the superstructure were compared with the charges for switching, per diem, labor and interest and depreciation on the box car equipment. In spite of the fact that one truck with its disproportionately heavy overhead charges has been compared with the pro rated operating cost of a large road, the results have convinced those in charge of this development that it is economical. It is now planned to present these figures to the other roads in Cincinnati with the idea of extending this service to the interchange of freight between roads.

COMING MAINTENANCE CONVENTIONS

The programs for the meetings of the three associations in the maintenance of way field, which will be held in September and October have been prepared and well attended and profitable conventions are anticipated. These associations are the Roadmasters' and Maintenance of Way Association, the American Railway Bridge and Building Association, and the Maintenance of Way Master Painters' Association. According to the programs, entertainment will form a minor feature of the various meetings, the subjects for discussion being selected for the most part with a view to their pertinence at the present time.

The Roadmasters' Convention

The convention of the Roadmasters' Association will be held at the Auditorium Hotel, Chicago, September 18-20, inclusive. The program for this meeting appeared in the *Railway Age Gazette* of July 20, page 102. Arrangements for the exhibit of the Track Supply Association to be held in connection with this convention are taking form, 47 firms having already arranged to present exhibits. A list of these companies is given elsewhere in this issue.

The Bridge and Building Convention

The American Railway Bridge and Building Association will hold a convention at the Hotel Sherman, Chicago, October 16-18, inclusive. The place of meeting was changed from St. Paul, previously selected, to Chicago because of the more central location. The program in detail is as follows:

Tuesday Morning, October 16

10:00 a. m.—Convention called to order by president.
Opening business and reports of officers.
11:00 a. m.—Committee report, Economical Delivery of Water to Locomotives.

Afternoon Session

Economical Methods of Handling Work Under Present Conditions

2:00 p. m.—Committee report—Erection of Plate Girder Spans with the Least Interruption to Traffic.
2:45 p. m.—Committee report—Repairing and Strengthening Old Masonry.
3:15 p. m.—Committee report—Paint and Its Application to the Exterior of Railway Buildings.
3:45 p. m.—Committee report—Fireproofing the Roofs of Wooden Buildings.
4:15 p. m.—Committee report—Encasing Girder Bridges in Concrete.
4:45 p. m.—A paper—Snow Sheds.

Tuesday evening has been set apart to pay tribute to the memory of Samuel F. Patterson, late secretary emeritus.

Wednesday Morning, October 17

The Labor Problem

9:30 a. m.—Committee report—How to Secure and Hold Bridge and Building Men.
10:00 a. m.—Committee report—Housing and Feeding Bridge and Building Maintenance Crews.
10:30 a. m.—Committee report—Uniform Rates of Pay Versus Differential Rates for Experienced Men.
11:00 a. m.—Committee report—Small Versus Large Gangs for Maintenance Work.
11:30 a. m.—Committee report—Labor-saving Equipment, Including Hand-operated Devices for Lifting, Pulling and Hoisting.

Wednesday Afternoon

The Material Problem

2:00 p. m.—Committee report—How Can We Best Meet the Present Bridge and Building Material Situation?
(a) With Reference to Bridge and Structural Steel, by Albert F. Reichman, Division Engineer, American Bridge Co., Chicago.
(b) With Reference to Building Materials.
(c) With Reference to Water Service Materials, by C. R. Knowles, Superintendent of Water Service, Illinois Central.
3:30 p. m.—Committee report—Conserving the Supply of Materials by Intelligent Reclamation.
4:00 p. m.—Committee report—Shipping Company Materials Economically by Loading Cars to Capacity and Unloading and Releasing Them Promptly, etc.
4:30 p. m.—Committee report—The Bridge and Building Material Yard.
(a) As a Separate Organization.
(b) As a Branch of the Stores Department.

Thursday Morning, October 18

9:30 a. m.—Call to order.
Unfinished and new business.
Election of officers and selection of meeting place for 1918.
Adjournment.

The Master Painters' Association

The Maintenance of Way Master Painters' Association will hold its annual convention at Cleveland, Ohio, on October 16-18, inclusive. The program, covering subjects that are of special importance at this time, is given in part below:

Tuesday, October 16, 10:00 a. m.

Opening Exercises

2:00 p. m.

Painters and Painters, C. F. Loweth, chief engineer, C. M. & St. P., Chicago, Ill.

Opening of the Question Box

Interior Wall Coatings, C. H. Hall, general superintendent Patton Paint Company, Milwaukee, Wis.
Methods Employed in Protecting the Public from Paint During the Renovating Period, H. B. Wilson, master painter, B. & L. E., Greenville, Pa.

Wednesday, October 17, 9:00 a. m.

Committee report—Painting of Water Tanks, Bert. E. Darrow, master painter, A. T. & S. F., Kansas City, Mo.
Open discussion: Painting of Danger Lines on Station Platforms.
The Volume of Maintenance of Way Painting, W. S. Lacher, managing editor, Railway Maintenance Engineer, Chicago, Ill.

Thursday, October 18, 9:00 a. m.

Committee report—Painting of Bridges, H. S. Bird, master painter, P. & R., Philadelphia, Pa.
Finishing of Floors, H. B. Wilson.
Efficiency, Economy and Safety First, H. F. Jones, master painter, Big Four, Wabash, Ind.

2:00 p. m.

Metal Protection, Phillip L. Maurey.
Committee report—Material and Labor Reports, W. I. French, master painter, N. Y. O. & W., Middletown, N. Y.
Answers and discussion of questions from question box.
Closing business.

Military Railway Construction.—It is common knowledge that the British army alone has constructed and is operating a very considerable mileage of standard and narrow gage railways behind the firing line in France, and brief particulars are occasionally made public in the course of ministerial speeches in the House of Commons. Under existing conditions, technical details of these lines are, naturally, not available, and it is to be hoped that after the war data as to construction, maintenance and operation will be placed at the disposal of railway men. The facts relating to operation should be of especial interest. As regards construction, it is to be noted that while quick track-laying is essential in the case of military railways in or near the actual fighting area, the lines must at the same time be built to accommodate heavy traffic, and the axle-loads are very considerable where big guns and high-calibre munitions have to be conveyed, so that much of the standard gage mileage is heavy. This is especially the case in the newest construction. Military railways often vary in details from those built for ordinary commercial traffic. For instance, on a military line "somewhere in England" keys are dispensed with, the rails are flat-bottomed and of T-section, and are secured to the sleepers by dog spikes.

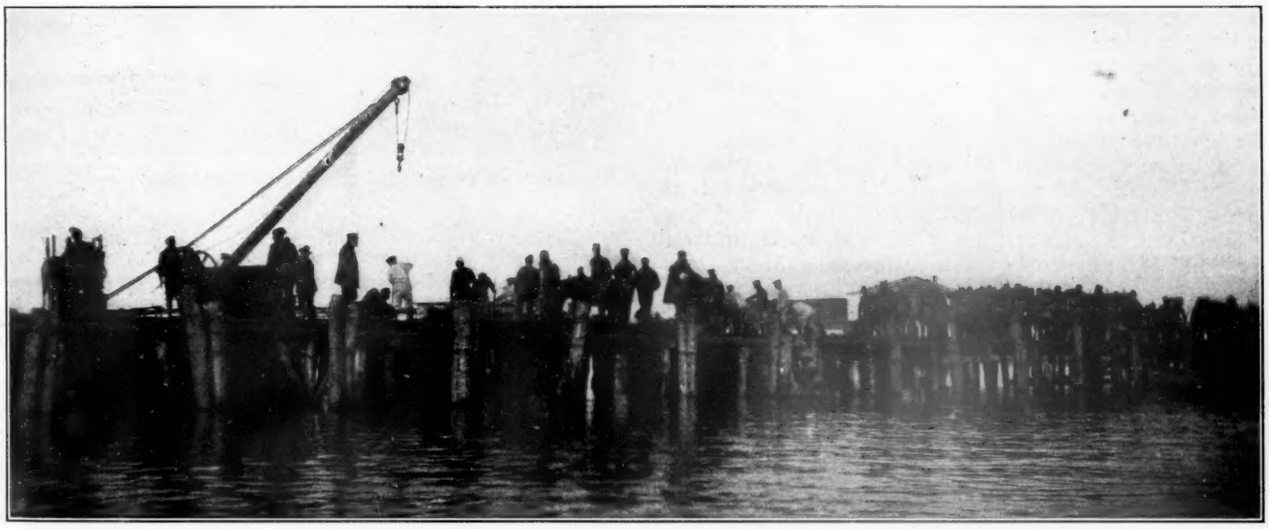
THE FIRST RAILROAD IN ALBANIA

By Our Special European Correspondent

A pair of steel rails today marks the continuation in the Balkan peninsula of the Via Appia, Queen of Roads, the historic example of the lasting nature of the work of the great Roman Empire.

After 2,229 years, the Italians, geographical inheritors of the ancient empire, have taken up the lost thread of the Via Appia on its way to the orient and there built, in Albania, not of stone but of steel, a road which will connect Rome with Athens and Byzantium (Constantinople). The Italians have rebuilt so far from Vallona along the route once known as the Egnatian section of the Via Appia. In ancient times the Via Appia had its starting point at the Gate of Capenza, at the foot of the Palatine Hill, in Rome, and thence wound along to Capua, thence to the modern Brindisi, refound itself across the Adriatic at Durazzo, capital of Albania, and thence drove along the shore above Vallona. Today the Italians plan to have the road begin at Vallona, connecting directly by boat with Brindisi.

In this war the Italians have followed the example of the old Romans. Wherever they have gone, they have not destroyed but reconstructed, built for the future, built roads, bridges, railroads, model camps of steel and concrete buildings, all of which will last and be useful to peace long after the war has ended. This has been particularly true regarding the mountain country of the Alps which they have wrenched from the Austrians, and during their brief year in Albania they have continued the civilizing work begun on their principal battle front.



The Dock in Albania From Which the Narrow Gage Line Started

There is considerable business and politics behind this railroad and reconstruction work. The political and military story of Italy's reasons for being in Albania has been told since Minister of Foreign Affairs Sonnino surprised Europe this summer by formally announcing Italy's occupancy of Albania and its intention to continue a protectorate there. Those unfamiliar with the fine points of European politics can hardly see how the occupancy of 11,000 square miles of territory, about one-third the size of Iceland, and at present not as rich, except for a troublesome population of three-quarters of a million, can cause much excitement among nations. But it must be remembered that the cause of this huge war began in the Balkans, because of its unsettled partitions of land ownership, because, broadly, the Central Empires wished to overrun the whole peninsula on their way to the Orient, whereas the other powers wished to maintain the peninsula as a territory thrown across the path of Central Empire progress. Despite her poverty in money, the dominant party in Italy wishes actually to re-establish the country as the ruler of the Mediterranean, and the Balkan policy is to form a federation of all the discordant racial elements and make the peninsula prosperous and powerful. This will take many, many years, and in the meanwhile Italy plans to rule the Adriatic, rather than let the Austrians do it. A part of this rule means the possession of the coasts of Albania. And while we are about it, say the Italians, why not make Albania prosperous, why not build roads and railroads? In the entire peninsula there are some 6,300 miles of railroad, mostly French built. But Albania, until the Italians came, had not a foot of railroad.

Some of the most interesting and difficult land and sea transportation the world has yet seen has taken place in the Mediterranean since the war began, first the movement of the English to the Dardanelles, then that of the French, chiefly, to Salonika, and more lately that of the Italians in Albania.

Albania, it must be understood, though fertile in soil in spots, has for centuries been well-nigh forsaken. Wild nature was here coupled with wilder bands of robbers. A few years ago, in 1913, the Austrians made a deal with the Turkish rulers and set up William Frederich as king. Then, possibly acting for the Italians, Essad Pasha in October, 1914, proclaimed a republic with himself as president. Latterly he simply picked up his scant baggage and departed towards Southern France, after the horrible midwinter retreat of the Serb army down the Albanian mountains, together with their Austrian prisoners.

The transportation of this body of starving men from Albania to the island of Corfu marked the beginning of the actual Italian occupation. Considering the submarine danger and their other normal war difficulties, it was quite a notable transportation job, that of handling 150,000 sick and disabled men. Cholera broke out among them, and in February, 1916, while the transfer to the island of Corfu was fairly well begun, two Italian ships, the Re Vittorio and the Cordova, each lost 500 men of this disease in the brief journey. The organization of the ports had been so rapidly and securely improvised that on certain days, for instance February 6, 1916, no less than 9,700 men were taken away from Durazzo—and this in the face of frequent submarine

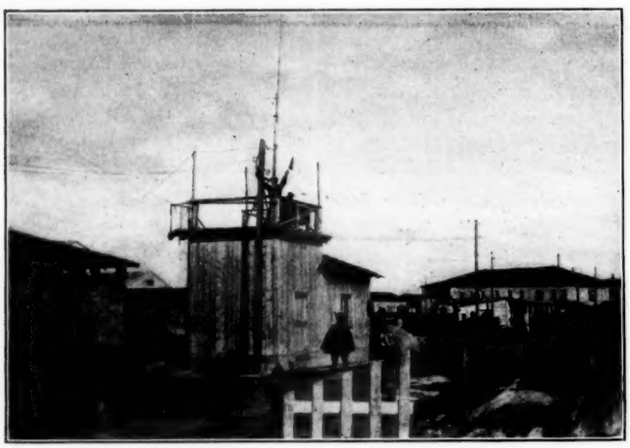
attacks. Now that we ourselves have to handle soldiers, we can better appreciate the feat.

The handling of these Serb troops is a small part of the land and sea transportation done by the Italians for their allies. Just how many hundred thousand English and French have been carried over the Italian railways down to Brindisi and thence either by sea or land to Salonika cannot be stated; but it must be set down to their credit that, with a railway system certainly not up to the American standard in normal times, during the war occupied with its own millions of men and their freight along its Alpine front, with a system approximately of the size of the Chicago & North Western, these Italians have done pretty well. It will be remembered that in northern France the railway situation was relieved by the English, who put on their own trains, their own railroad men, and rebuilt tracks. In Italy they have gone it alone.

The results obtained by the navy afloat in these transportation matters, of course, depended on the organizing of the port of Brindisi with new dock, modern methods of handling freight quickly, including building broad and narrow gage railways right down upon the docks, and also organizing the new port of Vallona in the same way.

When the Italians first went into Albania, with Vallona as their selected base, after having deserted Durazzo to the Austrians, their engineers realized that they must build a railway in order to penetrate into the interior in the direction of Monastir and eventually Salonika. When the land was not flat and swampy, it was made up of impossible hillsides, without roads other than the muddy paths traced by the horse-riding and dry weather Albanian carters.

So, before a stone road was built, a narrow gage line was laid, first operated by handcarts and horses hitched to the cars. With this primitive railroading artillery and army baggage was distributed through Albania, stores, materials for building army camps, and all the other heavy freight that cannot be carried on the back of men was thus gotten forward. In the wake of this wabbly little line came the

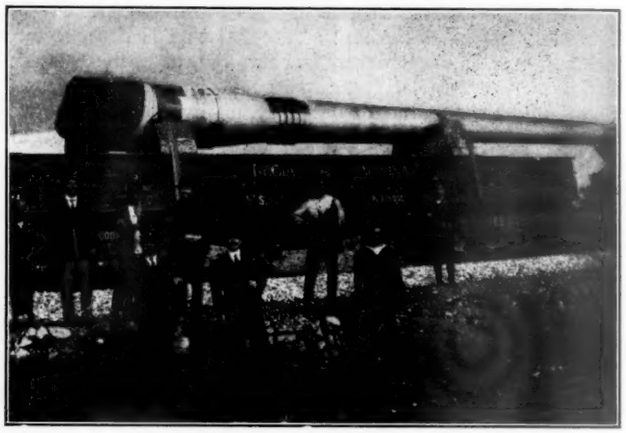


A Railroad and Telegraph Station in Albania

solid macadam road, permitting army carts and wagons to move, and troops to march with ease. Generally, it is the other way about. First comes the wagon road and then the railroad. As the country was gradually opened up by this first penetration line of tracks, more attention has been paid to the railroad and from a narrow gage, it is being turned into the so-called colonial gage used in the North African colony of Libia.

No less than 250 miles of good, solid road has been built to date in Albania, thanks to the first penetration narrow gage line, which itself is but 60 miles long, originating at the central station of Vallona and running to the Vojussa river which describes an arc up from Vallona. For the present, the great highway, now that it is completed, reaching from Santi Quaranti towards Delvina, Leriscovic, Erzeke, Koritza and Florima, appears the more important, permitting wagon and automobile communication between the Adriatic sea and the Orient.

But all the workers and visitors to Albania say that it is the narrow gage which has taken Albania out of the class of musical comedy countries, and given it a solid civilizing foundation. When the Italians came to the country there was nothing there, absolutely nothing but the ground upon which they walked. There was not even a sand road from



A "305" Gun En Route for Albania

the town of Vallona down to the sea. The town itself consisted mostly of a name attached to a few straw-thatched wooden houses and a few Turkish mosques. The coast was naked, the back-country was naked, and the people nearly so.

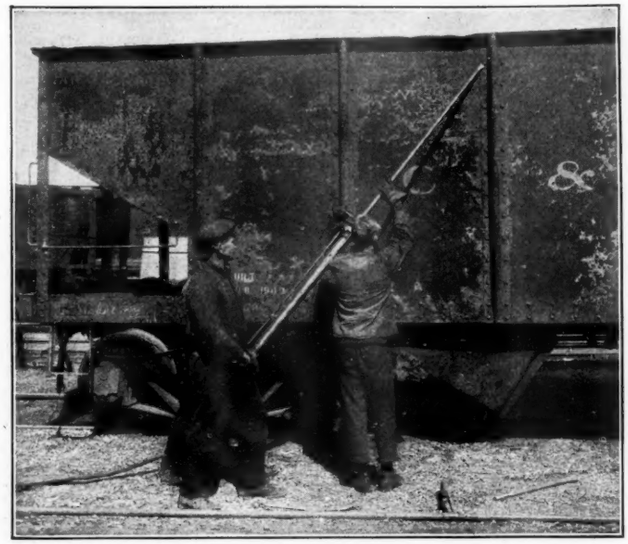
After a little dock had been built, a road hastily laid to the town, the ships disembarked their sailors and soldiers who went to work on the narrow gage. Then it was roads, and roads, and more roads, always pushing up country. One of the Italians told me how the Albanians first acted about this road business. "They looked on the narrow gage as the machinery of the devil that the crazy Italians were putting up. The women and children took to the tall grass, and the men would have gotten their old muskets into play had they dared. When the roads began to be passable, the natives carefully avoided using them, keeping their little mules to the cross country paths, for a time, looking with complacent irony on this useless work of civilization, but finally the easy-going interested them and the bridges across the streams got them."

Today school children walk over these roads and ride on the narrow gage, since the Italians have established 120 schools. In the wake of the army have come not only aeroplanes and automobiles and heavy artillery but real food and real clothes, Red Cross outfits with gentle born Italian nurses, and all these things are applied for the benefit of the Albanians. American and English charity has for many years vainly occupied itself with the unfortunate Albanians, ruined by Turkish rule, and today their hopes have been realized by the civilizing influence of a well ordered army occupation, which itself had a tiny narrow gage as its backbone.

INDIA'S RAILROAD RESOURCES FOR WAR.—India has already supplied for purposes of the war 900 miles of permanent way and rolling-stock ,including some 120 locomotives and 30,000 cars.

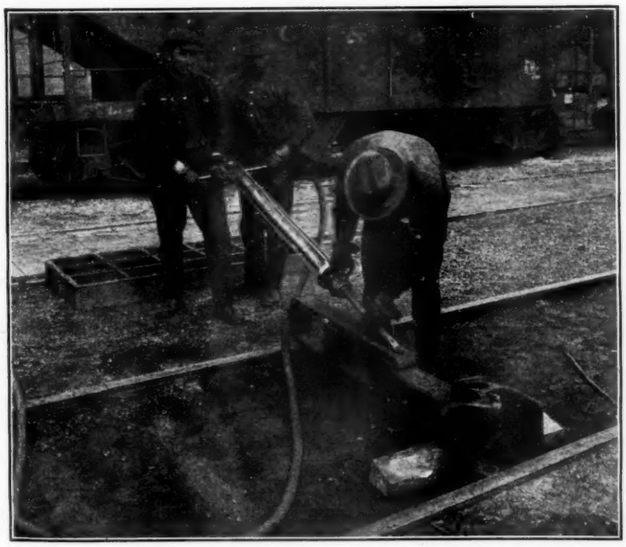
RIVET CUTTING GUN

An important factor in the repair and reconstruction of steel cars is the cutting of rivets. The inaccessibility of many of these rivets makes their removal more or less awkward when the work is done with a sledge and chisel. The Rivet Cutting Gun Company, 220 East Second street, Cincinnati, Ohio, has developed a device for cutting rivets that has been found serviceable in steel car work. With it is



Rivet Cutting Gun Being Used in Steel Car Repairs

provided a long cutting bar for use on the sides of cars and in inaccessible places underneath cars; in fact, the machine can be used wherever a rivet is to be removed. A punch is also provided to knock the rivets out after the heads have been cut off. The illustrations show how it is used for cutting rivets from the top of gondola cars, a 5-ft. bar being used in this case. This eliminates the necessity of scaffolding and provides a quick means of removing the rivets. The second illustration shows the rivet gun being used for cutting 1¼-in. steel coupler yoke rivets. In this case the work is done in the yards, it being unnecessary to carry the coupler to any machine. This machine is also used for straightening bent plates on steel cars and in punching holes for various purposes.

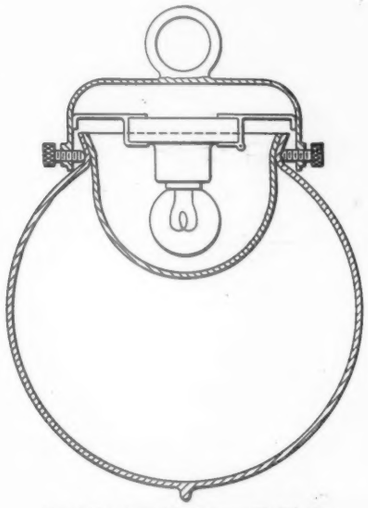


Removing Rivets from Drawbars with the Rivet Cutting Gun

This device weighs 71 lb. and is usually handled by three men, as indicated in the illustrations. It has been in use on one railroad for over a year; it has been found that three men with this tool can cut off 4,000 rivets in nine hours; this with a sledge hammer and bar would require four men four times as long. It is also reported that in working on a high side steel hopper car, which was wrecked, and which involved the removal of the center sill and attachments, the coupler, the hopper doors and all air attachments, 1,143 rivets of from ⅝ in. to ⅞ in. in diameter were cut off and backed out in 7¾ hours. This rivet gun can be operated with an air pressure of 55 lb., but 75 to 100 lb. is recommended for heavy work.

DODDS' STORED LIGHT

A means of storing and conserving light has recently been discovered accidentally by Ethan I. Dodds, who is associated with the Flannery interests of Pittsburgh in an engineering capacity, while experimenting on an appliance to enable the blind to see shadow pictures through the use of radium. Mr. Dodds found that by coating the interior of a globe with a certain mixture and subjecting it to the light, the coating would absorb light, which, when the source of light had been removed, would provide a certain amount of illumination. One interesting feature of this light is that it dissipates no heat.



Dodds' "Cold Stored" Light

The arrangement shown in the illustration is one of the experimental types of the "cold stored" light units made by Mr. Dodds. It consists of double glass globes, the inner surface of the outer globe being coated with the light retaining element. The secondary globe is sealed in the mouth of the outer one and is, of course, transparent. When light is flashed from any source whatever, it is absorbed by the inner surface of the outer globe. More effective results are obtained, however, when the light which is flashed is placed in the secondary globe as shown in the sketch. In this case it is a common incandescent lamp. With this arrangement enough light will be absorbed by the outer globe from five seconds' illumination of the incandescent bulb to provide a considerable amount of light for a period of 10 to 15 minutes. Although this light will not be strong enough to use for reading purposes, it will provide sufficient illumination to readily discern objects in a dark room.

The intensity of light, of course, will gradually reduce until about an hour after the light was first charged it will be invisible in a dark room. It is expected that further experiments will lead to a light which will provide greater intensity, but this may be overcome at the present time by the rapidity of the flashes and the number of the lights.

While the source of light in this particular instance is an incandescent bulb, any source of light can be used which will be strong enough to charge the coating on the inside of the outer globe. Marconi, the Italian inventor, has become much interested in the device and is developing a wireless sparker which can be used in place of the incandescent bulb which is illustrated. In this way, for instance, it might be possible to maintain these lights without any wiring apparatus for subsea lighting in order to enable ships to find their way safely through dangerous channels or it may be possible to use this arrangement in mines. In this case a dim light could be maintained underground by the wireless arrangement in case of explosion or when any defects occur in the regular lighting system.

It is quite possible that numerous applications may be found for this light in railway service when it has been completely developed. For instance, a dim light which did not throw off heat would prove most acceptable in the berths of sleeping cars during the summer months. It might also be used to good advantage in the subways or tunnels, where a strong light was not necessary. If the outer shell of the stored light globe were used in the same way as a frosted or sanded globe for ordinary lighting it would insure a dim light for 15 or 20 minutes if for any reason electric current was cut off.

The possibilities of this light are great where a light of high intensity is not required. When it is considered that a five seconds' flash of the incandescent light will provide illumination for possibly 15 minutes, a great saving in coal and other sources of energy supply can be realized. The fact that this light is given off with no generation of heat makes it very desirable. There are possibilities for its use in submarines, warships and other places where but a dim light is desired with the least possible amount of heat.

RAILROADING IN NO MAN'S LAND

"Building a military railway is not like constructing a transcontinental," says Major Royland Hill, writing to the Montreal Herald from the war correspondents' headquarters with the Canadian army in France. Major Hill continues:

You don't quite know what the route will be and your right-of-way has to be purchased with blood and shells. But you have to make a road bed and string rails just as swiftly, perhaps more so, for the penalty clause in the contract is defeat.

I couldn't find the colonel of the Canadian railway battalion I visited. He was somewhere out in front among the field ambulances where disgruntled German shells were still bursting, locating the grade for his next section, through the quagmire of a much-fought-over No Man's Land. But the adjutant was there, in a battered estaminent which had been, until yesterday, an advanced dressing station. His painter —they carry painters and divers, too—had changed the Red Cross symbol into the sign that means Canadian Railway Construction Corps, and which has a Canadian brigadier whose name is a textbook in railway construction at its head. The adjutant had his ear glued to the telephone and he was asking how his trains of material were coming along.

When you at home read that "the guns were being brought up satisfactorily," and that there "have been heavy rains all day," you picture struggling teams of horses dragging batteries into advanced positions.

There are some of the old pictures of war left, but they are few and far between. Sometimes the gun and ammunition have to take the muddy streaks, but if luck is the least with us now they go over well planked roads where hauling is fairly light, and by the time the roads are getting wearily worn of the traffic the railway is there. We learned the value of lumber and railways at the Somme.

On a huge stand, such as you might see at the draughtsman's office at railhead on construction at home, there was a large scale map of what was yesterday "Germany in Flanders." There are blue and red lines which begin behind our old trenches and end nowhere—perhaps on the Rhine. There are the standard gage and the light railways, and they are wanted quickly.

Already this particular two thousand yards of advance had been platted out with little stakes and tapes and the red-tabbed, keen staff captain of heavy artillery was putting the finishing touches to the plan. He had worked with the Canadian adjutant before they both knew what speed meant.

Some Marvelous Work

If it was easier to build a spur for a twelve-inch howitzer a few yards farther east, the gunner gave the builder the concession and phoned back to get his ranges corrected accordingly. If the gun had to go to that particular spot this Toronto captain would put on another hundred men for the job and build through the crater. There was no argument. Each knew the other knew his job.

Some of the material was already up. British labor parties under the direction of a Canadian major who had worked gangs on the prairies and in the western mountains were out in the shell-pocked area making the first thousand-yard grade.

The new railroad which had been advanced from yesterday was fast filling up with metals, fishplates, spikes and ties. There were just enough for the length to be built. Right and left-hand switches were labeled for the stations and gun spurs where they would be laid. The junctions and stations were sympathetically named after the places, big and little, in the Dominion, where they were torn up months ago and cast into this melting pot of the Empire's war. I am not giving the names that are on the map, but don't be surprised if tomorrow or this week you hear that new Regina, or Le Pas, or even Ottawa has been shelled. There will be a good eight or twelve, perhaps fifteen-inch howitzer to give an account of itself there.

Some Sudden Problems

"I'll want 200 twelve-inch shells at Ottawa dump tomorrow night," said the gunner captain. "Mind you, the line isn't built yet, and the gun is somewhere back at Vancouver, which is an old, before-the-push station."

"All serene," answered the Canadian adjutant. "I can pick them up at Halifax dump and bring them with the train taking the eight-inch to Oshawa." (Dominion geography is a bit mixed up here.)

It is swift traveling for a newly-constructed line, but then when the combination of railway and artillery experts gets going, things do travel with celerity. If Hindenburg wants to keep away from the big guns he will have to fall back more than five thousand yards in two days.

Thanks to sacrifices by British and Canadian railways, we have plenty of material, and we have the blended brains and labor, too, in these men of modern war, who pave the way for the huge guns and clear the way for the fighting men who "go over."

And when the guns are satiated, among the same lines will come anything from tin huts to house those men in the line, to tin hats to shelter them from shrapnel and tinned bully beef to feed them. There's never any want for traffic on the military railway.

General News Department

A military map of the United States showing the location of every cantonment, camp and training station has just been issued by the Union Pacific.

By direction of the Railroads' War Board, the per diem interchange rate of 60 cents on freight cars is to be continued in force until December 31, an extension of three months.

The twelfth annual convention of the Smoke Prevention Association will be held at the Deshler Hotel, Columbus, Ohio, on September 25, 26 and 27. Practical ways of firing locomotives smokelessly will be demonstrated at that time.

George W. Kirtley, assistant to the operating vice-president of the Erie, and until recently general superintendent of transportation of that road, has been appointed assistant to Robert S. Lovett of the War Industries Board. Mr. Kirtley will assist Judge Lovett on questions relating to the priority of freight shipments, which is Judge Lovett's special duty by appointment of President Wilson.

The Interborough Rapid Transit Company, operating elevated and subway railroads in New York City, has agreed with the Brotherhood of Interborough Rapid Transit Company Employees to pay bonuses, at the end of each month, to employees who have worked at least 22 days in the month, the bonus to be sufficient to make their pay for the month average $3 a day. This applies to all employees whose regular rate of pay is less than $3 a day, and the maximum bonus will be $3 a month.

Edward Chambers, vice-president in charge of traffic of the Atchison, Topeka & Santa Fe, with office at Chicago, who was recently appointed an assistant to Herbert Hoover, United States food administrator, has been given the title of chief of the division of transportation. Fred S. Brooks, vice-president of the Sioux City Terminal Railway, the St. Paul Bridge & Terminal Railway, and the St. Joseph Belt Railway, with office at Chicago, has been appointed chief assistant in the division of transportation.

The United States Civil Service Commission announces examinations, October 2, for the position of senior signal engineer, grade 1, for the Interstate Commerce Commission, for work in connection with the valuation of railway property; salary, $3,000 to $4,800. Appointments will be principally for duty in the field. The commission seeks men with thorough technical training and several years' responsible experience; also with a thorough acquaintance with the methods of appraisal and cost estimating of railway signals and interlocking apparatus. Applicants must be graduates of an approved school and have had five years' responsible experience; or, if not graduates, ten years' experience. They must be between 30 and 60 years old.

Zone System of Second-Class Mail Rates

In its consideration of the war revenue bill the United States Senate on August 29 rejected the proposed special tax of 5 per cent on the profits of publishers above $4,000 yearly, and also the flat increase of ¼ cent a pound in the second class mail rate. In place of this, as a substitute for the zone rates provided in the bill as it passed the House, the Senate adopted an amendment proposed by Senator McKellar providing for the following zone system of rates, the zones being the same as those prescribed for parcel post; one cent a pound for the first 300 miles, with an increase of one cent a pound for each additional zone up to the eighth, where the rate would be six cents.

Increase in Shopmen's Pay on the Missouri, Kansas & Texas

The Missouri, Kansas & Texas management recently came to an understanding with its shopmen with reference to wage increases. The terms of settlement with the men included a flat increase of 6½ cents an hour to machinists, boilermakers, blacksmiths, sheet metal workers and electricians, and to the helpers in the different trades and helper apprentices. Regular apprentices were granted an advance of 2½ cents an hour. The increases make the standard rate of pay for machinists, boilermakers, blacksmiths, sheet metal workers and shop electricians for points north of Muskogee, Okla., 50 cents an hour; for Muskogee and points south, including Oklahoma City and McAlester and all points in Texas, 51 cents an hour, and on the Wichita Falls & Northwestern, 52 cents an hour. Machinists, steel metal worker and electrician helpers will receive 30½ cents an hour at all points on the system and boilermaker and blacksmith helpers 33 cents an hour.

Trainmen Honor Former Railway Officer

As a tribute to the memory of Patrick H. Morrissey, formerly grand master of the Brotherhood of Railroad Trainmen, a monument was unveiled on Labor Day at Galesburg, Ill., where he is buried. The monolith, which is of granite, 15 ft. high, was purchased through popular subscription among members of the brotherhood. At the time of his death, last November, Mr. Morrissey was not a member of the B. of R. T., as his membership had ceased automatically when he became assistant to the vice-president in charge of operation of the Chicago, Burlington & Quincy in June, 1913. This is believed to be the first instance in which a railway labor organization has honored a former railroad officer.

Stop the Valuation!

It was about six years ago that the Government undertook what it called a "physical valuation" of the railroad properties in this country. The Observer did not hesitate to go on record as classifying this proceeding as the monumental folly of the age. It now develops that this valuation board has expended all its money and has called for another $10,000,000. Now is a good time to stop the whole proceeding. It is better to let the money already expended go, with the blessing of a misguided Government, than to provide additional appropriations to which there may be no end. Of what good has been the valuation so far accomplished at a cost to the Government of $10,000,000? Congress should set its foot down hard on this proposition for another appropriation.—*Charlotte* (N. C.) *Observer.*

7,000 More Cars Distributed

More than 7,000 additional empty cars have been ordered into the South and Southwest to move grain and food products and lumber for the cantonments and shipyards. The orders which the Commission on Car Service of the Railroads' War Board have issued since the policy was adopted of moving empty cars from one railroad to another, regardless of ownership, have resulted in 113,420 cars being distributed where they were most needed.

All of this movement has taken place since May 1. As a result, despite the most terrific pressure ever known, millions of tons of Government supplies, munitions and materials have been transported without a hitch and without interfering to any great extent with the regular commercial traffic of the country which, too, has been increased to vast proportions by the war.

By this latest order, 2,450 cars are to be placed in the grain-producing country, 4,537 additional cars have been sent into the lumber states of the South, and 400 others sent to one of the Atlantic coast lines to provide for an unexpected increase in general freight traffic.

The lines to which cars have been consigned for grain, are as follows: Chicago & Eastern Illinois, 500; Cincinnati, Indianapolis & Western, 500; Wabash, 500; Chicago, Indianapolis & Louisville, 250; Toledo, St. Louis & Western, 300; Gulf Coast, 200. Cars for lumber have been sent to Central of Georgia, 100; Louisville & Nashville, 500; Mobile & Ohio, 350; Illinois Central, 350; Louisiana Railway & Navigation Company, 12; Gulf, Florida & Alabama, 275; Nashville, Chattanooga & St. Louis, 300; Toledo, Peoria & Western, 150; Georgia & Florida,

75; Southern, 500; Atlantic Coast Line, 1,250; Atlanta, Birmingham & Atlantic, 75; Seaboard Air Line, 400; Charleston & Western Carolina, 300.

"Service Stripes" on Santa Fe Cars

"Every railroad in the United States is enlisted in the work of helping to win the war, and hereafter every freight car of the Santa Fe system will wear its 'service stripes,'" President E. P. Ripley said in a recent interview. These "service stripes" will be of red, white and blue of equal width, printed horizontally on cardboard, 12 in. by 18 in. On the stripes is printed in black the freight car's patriotic appeal to its users:

LOAD ME QUICKLY
LOAD ME TO CAPACITY
UNLOAD ME PROMPTLY
AND
HELP WIN THE WAR!

"If anybody thinks the humble freight car is not one of the most important factors in war," continued Mr. Ripley, "let him imagine what would happen in a very short time to Germany, France, England or to this country if all freight cars stopped running for a month, or even a week. While the war lasts there will not be enough freight cars to supply the demand, hence the necessity of making every car perform its maximum service. . . ."

Employees May Keep Their Bonds in the Company's Treasury

Arrangements to provide for the safekeeping of Liberty Loan Bonds purchased by employees of the Pennsylvania Railroad and and its lines east of Pittsburgh, have been made by the treasury department of the company, according to the announcement made last week by James F. Fahnestock, treasurer, through the general superintendents of the various grand divisions and the heads of departments in the general offices.

Special authority to perform this service has been accorded to the treasurer by the board of directors. In the capacity of custodian, he will accept for safekeeping the Liberty Bonds purchased by employees who have no such facilities. The interest on such bonds will be collected as it falls due June 15 and December 15 of each year and will be added to the payrolls for the last half of the months of June and December, respectively.

No charge of any kind will be made to employees availing themselves of this privilege. All that is required is the deposit of the bond by the execution of a request to the treasurer of the Pennsylvania Railroad, asking him to hold the bond, collect the interest and add it to the employees' payroll.

Over 53,000 of the employees of the Pennsylvania Railroad lines east of Pittsburgh subscribed to the Liberty Loan, taking a total of $3,500,000. About 10 per cent of these made payment in full and are entitled to receive their bonds as soon as the Government makes delivery, which will probably be some time after September 1. Such employees may deposit their bonds at once if they so desire. The remainder of the bonds were purchased under the special installment plan offered by the company, which called for ten equal monthly installments of 10 per cent each beginning July 15, 1917.

2,540 Pennsylvania Employees With the Colors

Thus far, 2,540 employees of the Pennsylvania Railroad, lines east of Pittsburgh, have entered the Army and Navy of the United States as volunteers, and have been granted furloughs from the railroad service. Of this number, 75 have been appointed commissioned officers and 30 are student officers in various officers' training camps. The remainder, numbering 2,442, are enlisted men in the Army and Navy.

The commissioned officers include one colonel, one lieutenant-colonel, two majors, 21 captains, 23 first lieutenants, 22 second lieutenants, three ensigns and one pay clerk.

In addition to the employees of the Pennsylvania Railroad who have entered the military and naval service, as volunteers, many more are certain to be taken for the National Army under the draft. The exact extent by which the working force of the railroad will be further reduced, in this manner, will not be definitely known until the work of the various examining boards has been completed. However, it has been ascertained that there are in the service of the Pennsylvania Railroad lines east of Pittsburgh, 60,000 men, who are liable to military service under the law, and based upon the average proportion of the eligible men who will be taken in the first draft, 3,000 of these will be called.

Proposed Modifications in Locomotive Inspection Requirements

A number of proposed modifications in the rules for locomotive boiler inspection, intended to give the railroads some relief from the requirements of the present rules during the period of the war on account of the shortage of labor for shop work and inspection, were agreed upon at a conference at Washington on Wednesday between the division of locomotive boiler inspection of the Interstate Commerce Commission and the mechanical subcommittee of the Special Committee on Relations of Railway Operation to Legislation.

The modifications were proposed by the railroad committee because of the difficulty of living up to the requirements of the rules on account of the shortage of labor and materials and because of the pressure to keep all available motive power in service on account of the unprecedented volume of traffic. The members of the committee, headed by C. E. Fuller, superintendent of motive power and machinery of the Union Pacific, explained the conditions which impelled them to ask for the modifications, and asked especially for a reduction of the requirements for work on engines that could be as well taken care of when they had to be sent to the shop at some other time. Representatives of the engineers' and firemen's brotherhoods opposed any modification of the rules, and a protesting letter was received from the Railroad Department of the American Federation of Labor.

Frank McManamy, chief inspector, said he appreciated the condition and that the inspectors had been instructed to be lenient. After a discussion of the rules proposed by the roads he agreed to seek the approval of the commission for certain changes which would give relief for the period of the war, in some cases proposing modifications from the form proposed by the committee and in other cases declining to approve any change, while some of the substitute proposals gave the roads more than they had asked.

One of the modifications suggested by Mr. McManamy would permit the retention in service of locomotives with a factor of safety of 3¼, to be increased to 3½ within six months after the close of the war. It was shown that numerous roads are now operating locomotives with a factor of safety less than that provided by law. Other changes provide for an extension of time for the removal of boiler tubes from three to four years, an extension for the period of the war of the time for the removal and inspection of jacket and lagging and an extension of the time for the testing of flexible staybolts with caps.

Positions Open in the Ordnance Department

The United States Civil Service Commission announces the following open competitive examinations for positions in the several ordnance establishments of the War Department, or in or under the office of the Chief of Ordnance, War Department, Washington, D. C. The salaries named are for entrance:

Mechanical engineer, artillery ammunition, $3,000 to $3,600 year.
Mechanical engineer, experimental work, $2,500 to $3,000 year.
Mechanical draftsman, $1,000 to $1,400 year
Apprentice draftsman, $480 year.
Inspector of artillery ammunition, $1,500 to $2,400 year.
Inspector of field artillery ammunition steel, $1,500 to $2,400 year.
Assistant inspector of field artillery ammunition steel, $3.50 to $5 day.
Inspector of ammunition packing boxes, $3.52 day to $1,800 year.
Inspector and assistant inspector of powder and explosives, $1,400 to $2,400 year.
Inspector of ordnance equipment, $1,500 to $2,400 year.
Assistant inspector of cloth equipment, $80 to $125 month.
Assistant inspector of leather, $100 to $125 month.
Assistant inspector of small hardware, $80 to $125 month.
Assistant inspector of textiles, $80 to $125 month.
Assistant inspector of leather equipment, $100 to $125 month.
Clerk qualified in business administration, $1,200 to $1,500 year.
Index and catalogue clerk, $1,000 to $1,200 year.

The examination for index and catalogue clerk is open to both men and women; the other examinations are open only to men.

The government urgently needs men for the work above indicated, and qualified persons are urged, as a patriotic duty, to apply for examination. Until further notice applications for the positions named will be received at any time by the United States Civil Service Commission, Washington, D. C. Papers

will be rated promptly. Applicants will not be required to appear at any place for examination, but will be rated principally upon the elements of education, training and experience, as shown by their applications and by corroborative evidence.

Full information concerning examinations, application blanks, etc., may be obtained by calling in person upon the secretary of the local board of civil service examiners at the post office in any city in which city delivery of mail has been established, or by communicating with the United States Civil Service Commission, Washington, D. C.

Strike of B. & M. Shopmen

The machinists, blacksmiths and boiler makers of the Boston & Maine struck, on August 31, and all the locomotive repair shops, general and division, stopped work, about 3,000 men going out. Nearly half of these men were employed at the shops at Billerica, Mass. Conferences concerning the requests of the men for higher pay have been held a number of times since last April, when an increase of about two cents an hour was granted and was made retroactive from January 1, 1917. In July the men asked for a further increase of eight cents an hour. The New Haven road has recently granted an increase and the Receiver of the Boston & Maine offered to make the pay on the B. & M. equal to that on the New Haven, but this was refused. The increase on the New Haven, three cents an hour, brought the rates up to a point a little in excess of the rates on the Boston & Maine. On Monday of this week the receiver, James H. Hustis, issued a statement in which he said:

"There should be no misunderstanding on the part of the public or of the employees as to the seriousness of the situation. The officers of the railroad, and particularly the temporary receiver, are fully conscious of what it involves. There is no thought other than that the railroad must rely largely on these men who have quit work returning to it to enable the road to give the service that is so imperatively needed at this time. It would be extremely unfortunate if there should be any bitterness injected into the controversy.

"Regardless of any question as to where the responsibility rests for the men going out, it must be remembered that as yet there has been no attempt to determine finally whether the increases in rates of pay demanded by the men are warranted by changes in conditions arising since the last wage adjustment in April, or the adoption by the New Haven Railroad in June last of a lower agreed scale for similar work.

"The sole point upon which the question of the strike has heretofore turned was whether the receiver should of his own motion, and without opportunity to consult with the United States Court under whose jurisdiction he is acting, agree to an increase of wages for certain classes of employees much higher than those paid by any other railroad in the territory; and the immediate effect of which would be to increase the cost to the railroad of such labor by about $900,000 per year.

"To appreciate the receiver's position it must be remembered that if he should do this it is not unlikely that he would be called upon very shortly to deal with similar demands from employees (not affected by the eight-hour law) in other departments and if he granted similar increases to them, and on the same basis, the aggregate increase would run up to nearly $5,000,000 per annum. And this in spite of the fact that the increases in wages already granted during the past twelve or fourteen months amount to upward of $2,500,000; nor is there any guarantee that the same body of employees would not six months hence make another demand. The situation is an impossible one.

"Between the absolute necessity of the railroad retaining the men, on the one hand, and the impossibility of still further exceeding the financial capacity of the road on the other, an adjustment such as is proposed would seem to be out of the question unless there be some tribunal which can determine what is a fair compromise.

"It was the hope that the Court might be of some assistance in this direction that led the receiver to ask for a delay until September 10, when he was informed Judge Morton would return from his vacation. Efforts were made to reach Judge Morton before the strike took place but it was found that he was on a sailing trip and away from communication. We are still trying to reach him.

"It is said that if the receiver had promised that he would recommend to the Court a six cents per hour increase the men would have deferred the strike until the Court could be consulted. It must be apparent to anyone who takes into consideration the whole situation and its possible consequences that some method of dealing with it must be found which will be more effective and more permanent than that. The situation is one that should be dealt with in such a way that the larger aspects of the case will have consideration.

"The efforts of the State Board of Arbitration and Conciliation to bring about a settlement are fully appreciated and will be availed of to the extent that it is possible to do so, but it is felt that the probable consequences will reach far beyond this State and the matter will be one of pressing interest to the Federal authorities. How far reaching are the questions here involved becomes evident if one considers that if demands similar to these were granted in all classes of labor outside of those affected by the eight-hour law, the increases in transportation rates required to compensate the railroad for the loss would be so large as to require the most careful investigation.

"In the meantime the railroads' war board has been advised of the situation and requested to inform the Secretary of Labor as to the facts. It seems unfortunate that the railroad is without the services of a large number of its employees and that the employees are losing their wages, especially in view of the fact that any wage increase that may be hereafter granted would, undoubtedly, be made retroactive."

After a conference with Justice Norton on Wednesday of this week, Mr. Hustis wrote to Mr. Fechner, chairman of the general committee of the strikers, offering to submit the controversy to arbitration, the arbitrator or arbitrators to be named by the Chairman of the Council of National Defense, the award when made to be retroactive to September 5, and the men to return to work meanwhile.

American Gear Manufacturers' Association

The meeting of the American Gear Manufacturers' Association will be held at the Edgewater Beach Hotel, Chicago, September 14 and 15. Papers on the following subjects will be presented: Advertising Don'ts, Heat Treating and Hardening of Gears, Inspection of Gearing, Spur Gearing by the Rotary or Disk Cutting Process, Spur Gears by the Shaper Method.

National Safety Congress

The National Safety Council, W. H. Cameron, Chicago, secretary, will hold its sixth annual safety congress at Hotel Astor, Broadway and 44th street, New York City, on Tuesday, Wednesday, Thursday and Friday, September 11, 12, 13 and 14. The sessions each day will be from 9:30 to 12 in the forenoon, and from 2 to 5 in the afternoon. The principal general session will be on Wednesday forenoon, with L. R. Palmer, president of the council, presiding. Addresses will be given by Hon. William D. Wilson, secretary of labor; Dr. Charles P. Steinmetz, of the General Electric Company; and Marcus A. Dow, general safety agent of the New York Central. Mr. Dow's new motion picture, "The Rule of Reason," will be exhibited.

The first meeting of the Steam Railroad Section of the Council will be held on Wednesday afternoon and will be continued Thursday morning and afternoon, and also Friday morning. The chairman of this section is Isaiah Hale (A. T. & S. F.), and the secretary is H. J. Bell (C. & N. W.). The speakers before the Section, as announced, are C. M. Anderson (N. C. & St. L.); L. E. Abbott (O. S. L.); T. H. Carrow (Penn.); Howard Elliott (L. A. & S. L.); David Moore (U. P.); C. H. Blakemore (N. & W.); J. T. Broderick (B. & O.); C. B. Floyd (N. Y. C.); S. G. Watkins (B. & M.); F. N. Loughnan (L. V.); C. H. Baltzell (St. L.-S. F.); H. J. Bell (C. & N. W.); S. S. Morris (I. C.); G. L. Wright (C. St. P., M. & O.); and C. A. Cochrane (G. N.).

The meeting on Friday morning will be devoted to new subjects brought up during the preceding sessions and to reviews, if reviews are called for; and Friday afternoon will be devoted to unfinished business and to the election of officers.

Among the directors of the National Safety Council, besides Messrs. Dow, Hale and Broderick, already mentioned, are J. M. Guild (U. P.); E. F. Carry, president of Haskell & Barker; L. A. Larson, American Locomotive Company; H. D. Sharpe, Brown & Sharpe; W. B. Spaulding (St. L.-S. F.); R. C. Richards (C. & N. W.); E. C. Spring, Lehigh Valley Transit Co.;

and W. C. Wilson, formerly on the Delaware, Lackawanna & Western.

In connection with this congress there will be an elaborate "safety exposition" in the Grand Central Palace, 46th street and Lexington avenue, open each day, including Saturday, from 3 p. m. to 10.30 p. m. The director of exhibts is M. A. Dow (N. Y. C.), third vice-president of the Council, who also is chairman of the committee of arrangements for the congress.

War Convention of American Business Men

The Chamber of Commerce of the United States has called a War Convention of American Business Men, to be held at Atlantic City, September 18 to 21, inclusive.

As briefly noted in the *Railway Age Gazette* of August 24, the general subjects discussed will be:

(1) The duty that business owes the Government in war;

(2) How may the business of the country render greater service in winning the war? Under this subject will also be discussed the question: How shall greater efficiency of land and water transportation be developed?

(3) Ways and means by which business may most readily adjust itself to the conditions produced by the war;

(4) For what readjustments after the war must business prepare?

In calling the meeting the president of the Chamber of Commerce has stated:

"It is the patriotic duty of every live business man who can possibly arrange to do so to attend this convention, not only to show emphatically where the business men of the United States stand in the present crisis, but also that each may gain from such a meeting all possible knowledge as to how he can plan more intelligently to be of greater service in the common cause."

The Chamber of Commerce in its War Bulletin No. 17, adds that:

"This convention will give business men the opportunity to voice their support of the government in this time of national trial. It will give them the opportunity of expressing to the government what the experience of business men has been in problems similar to those which the government is now facing. They can learn from government representatives who will be at the meeting what the government expects of business. But above all, the meeting will bring business men in contact with the problems of this great industrial war, and give them the opportunity of thinking about these problems and of reaching conclusions."

Exhibitors at the Roadmasters' Convention

The convention of the Roadmasters' and Maintenance of Way Association will be held at the Auditorium Hotel, Chicago, September 18 to 20, inclusive. The program for this meeting will be found elsewhere in this issue. From the interest expressed and the progress made in the preparation of committee reports and papers the meeting promises to be one of the most valuable ever conducted by this organization.

Equally promising indications are evident relative to the exhibit of the Track Supply Association, although the letters asking for reservations of space were not sent out until July 26. Forty-seven firms have already arranged to present exhibits and only a few spaces remain to be allotted. Among the firms which have already arranged to present exhibits are the following:

Ajax Forge Company, Chicago.
Alexander Milburn & Co., Baltimore, Md.
American Steel & Wire Co., Chicago.
American Valve & Meter Co., Cincinnati, Ohio.
American Hoist & Derrick Co., St. Paul, Minn.
Anti-Creeper Corporation, New York.
Barrett Co., New York.
Bethlehem Steel Co., South Bethlehem, Pa.
Carbic Mfg. Co., Duluth, Minn.
Carnegie Steel Co., Pittsburgh, Pa.
Chicago Railway Equipment Co., Chicago.
Chicago Malleable Castings Co., Chicago.
Cleveland Frog & Crossing Co., Cleveland, Ohio.
Crerar, Adams & Co., Chicago.
Duff Mfg. Co., Pittsburgh, Pa.
Fairbanks, Morse & Co., Chicago.
Fairmont Gas Engine & Railway Motor Car Co., Fairmont, Minn.
Hauck Manufacturing Company, New York.
Hayes Track Appliance Co., Richmond, Ind.
R. W. Hunt & Co., Chicago.
Ingersoll Rand Co., New York.
Indianapolis Brush & Broom Co., Indianapolis, Ind.
Lackawanna Steel Co., Buffalo, N. Y.
Madden Co., Chicago.
Mudge & Co., Chicago.
National Lock Washer Co., Newark, N. J.
National Malleable Castings Co., Cleveland, Ohio.
Pocket List of Railroad Officials, New York.
Positive Rail Anchor Co., Marion, Ind.
P. & M. Co., Chicago.
Q. & C. Co., New York.
Rail Joint Co., New York.
Railway Equipment & Publication Co., New York.
Railroad Supply Co., Chicago.
Ramapo Iron Works, Hillburn, N. Y.
Reading Specialties Co., Reading, Pa.
Henry Roos Foundry Co.
Sellers Mfg. Co., Chicago.
Simmons-Boardman Publishing Co., New York.
Simple Gas Engine Co.
Southern Railway Supply & Equiment Co., St. Louis, Mo.
Templeton-Kenly Co., Chicago.
Union Switch & Signal Co., Swissvale, Pa.
Verona Tool Works, Pittsburgh, Pa.
Walls Frogless Switch & Mfg. Co., Kansas City, Mo.
Wm. Wharton, Jr., & Co., Easton, Pa.
Wyoming Shovel Works, Wyoming, Pa.

MEETINGS AND CONVENTIONS

The following list gives names of secretaries, dates of next or regular meetings and places of meetings:

AIR BRAKE ASSOCIATION.—F. M. Nellis, Room 3014, 165 Broadway, New York City.

AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—F. A. Pontious, 455 Grand Central Station, Chicago.

AMERICAN ASSOCIATION OF DINING CAR SUPERINTENDENTS.—H. C. Boardman, D. L. & W., Hoboken, N. J. Next convention, October, 1917, San Francisco, Cal.

AMERICAN ASSOCIATION OF FREIGHT AGENTS.—R. O. Wells, Illinois Central, Chicago, Ill.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York. Next meeting, October 16-17, St. Louis.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—E. H. Harman, Room 101, Union Station, St. Louis, Mo.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—E. B. Burritt, 8 W. 40th St., New York. Convention for 1917 postponed.

AMERICAN ELECTRIC RAILWAY MANUFACTURERS' ASSOCIATION.—Fred C. J. Dell, 165 Broadway, New York.

AMERICAN RAILROAD MASTER TINNERS', COPPERSMITHS' AND PIPEFITTERS' ASSOCIATION.—W. E. Jones, C. & N. W., 3814 Fulton St., Chicago. Convention for 1917 postponed.

AMERICAN RAILWAY ASSOCIATION.—J. E. Fairbanks, general secretary, 75 Church St., New York.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W., Chicago. Next convention, October 16-18, 1917, Chicago.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—E. H. Fritch, 900 S. Michigan Ave., Chicago.

AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—J. W. Taylor, 1112 Karpen Bldg., Chicago.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—Owen D. Kinsey, Illinois Central, Chicago.

AMERICAN SOCIETY FOR TESTING MATERIALS.—Prof. E. Marburg, University of Pennsylvania, Philadelphia, Pa.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—Chas. Warren Hunt, 220 W. 57th St., New York. Regular meetings, 1st and 3d Wednesday in month, except July and August, 220 W. 57th St., New York.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—F. J. Angier, Supt. Timber Preservation, B. & O., Mt. Royal Sta., Baltimore, Md. Next convention, January, 1918, Chicago.

ASSOCIATION OF AMERICAN RAILWAY ACCOUNTING OFFICERS.—E. R. Woodson, Rooms 1116-8 Woodward Bldg., Washington, D. C. Next meeting, September 26, Congress Hotel, Chicago.

ASSOCIATION OF MANUFACTURERS OF CHILLED CAR WHEELS.—George W. Lyndon, 1214 McCormick Bldg., Chicago. Semi-annual meeting with Master Car Builders' Association.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—Willis H. Failing, Terminal Station, Central of New Jersey, Jersey City, N. J.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W., Room 411, C. & N. W. Sta., Chicago. Semi-annual and annual convention postponed indefinitely.

ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—W. L. Connelly, Superintendent of Telegraph, Indiana Harbor Belt, Gibson, Ind. Next annual meeting to have been held September 18, 1917, Washington, D. C., indefinitely postponed.

ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—G. P. Conard, 75 Church St., New York.

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—Tom Lehon, The Lehon Company, Chicago. Meetings with American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—James Powell, Grand Trunk, P. O. Box 7, St. Lambert (near Montreal), Que. Regular meetings, 2d Tuesday in month, except June, July and August, Windsor Hotel, Montreal, Que.

CANADIAN SOCIETY OF CIVIL ENGINEERS.—Clement H. McLeod, 176 Mansfield St., Montreal, Que. Regular meetings, 1st Thursday in October, November, December, February, March and April. Annual meeting, January, Montreal.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 841 Lawlor Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, Hotel La Salle, Chicago.

CENTRAL RAILWAY CLUB.—H. D. Vought, 95 Liberty St., New York. Regular meetings, 2d Friday in January, May, September and November Annual dinner, 2d Thursday in March, Hotel Statler, Buffalo, N. Y.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S ASSOCIATION.—W. R. McMunn, New York Central, Albany, N. Y. Next convention, September, 1917, St. Louis.

ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.—Elmer K. Hiles, 568 Union Arcade Bldg., Pittsburgh, Pa. Regular meetings, 1st and 3d Tuesday, Pittsburgh, Pa.

FREIGHT CLAIM ASSOCIATION.—Warren P. Taylor, Traffic Manager, R. F. & P., Richmond, Va.

GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—A. M. Hunter, 321 Grand Central Station, Chicago. Regular meetings, Wednesday, preceding 3d Thursday in month, Room 1856, Transportation Bldg., Chicago.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—A. L. Woodworth, C. H. & D., Lima, Ohio.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—J. G. Crawford, C. B. & Q. R. R., 702 E. 51st St., Chicago. Next convention, May, 1918, Chicago.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1126 W. Broadway, Winona, Minn. Annual meeting, to have been held September 4-7, 1917, Hotel Sherman, Chicago, indefinitely postponed.

INVESTMENT BANKERS' ASSOCIATION OF AMERICA.—Frederick R. Fenton, 11 W. Monroe St., Chicago. Annual convention, October 1-3, 1917, Baltimore, Md.

MAINTENANCE OF WAY AND MASTER PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.—F. W. Hager, Fort Worth & Denver City, Fort Worth, Tex. Next convention, October 16-18, 1917, Cleveland, Ohio.

MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 95 Liberty St., New York.

MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.—A. P. Dane, B. & M., Reading, Mass. Next annual meeting, September 11, 1917, Chicago.

MASTER CAR BUILDERS' ASSOCIATION.—J. W. Taylor, 1112 Karpen Bldg., Chicago.

NATIONAL ASSOCIATION OF RAILWAY COMMISSIONERS.—Jas. B. Walker, 120 Broadway, New York City. Next annual convention, October 16, 1917, Washington, D. C.

NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. W. Kelly, 349 Peoples Gas Bldg., Chicago.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meeting, 2d Tuesday in month, except June, July, August and September, Boston.

NEW YORK RAILROAD CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meeting, 3d Friday in month, except June, July and August, 29 W. 39th St., New York.

NIAGARA FRONTIER CAR MEN'S ASSOCIATION.—Geo. A. J. Hochgrebe, 623 Brisbane Bldg., Buffalo, N. Y. Meetings 3d Wednesday in month, New York Telephone Bldg., Buffalo, N. Y.

PACIFIC RAILWAY CLUB.—W. S. Wollner, Assistant to Chief Engineer, Northwestern Pacific R. R., San Francisco, Cal.

PEORIA ASSOCIATION OF RAILROAD OFFICERS.—F. C. Stewart, 410 Masonic Temple Bldg., Peoria, Ill. Regular meetings, 3d Thursday in month, Jefferson Hotel, Peoria.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 30 Church St., New York.

RAILWAY CLUB OF PITTSBURGH.—J. B. Anderson, Room 207, P. R. R. Sta., Pittsburgh, Pa. Regular meetings, 4th Friday in month, except June, July and August, Pittsburgh Commercial Club Rooms, Colonial-Annex Hotel, Pittsburgh.

RAILWAY DEVELOPMENT ASSOCIATION.—D. C. Welty, Commissioner of Agriculture, St. L., Iron Mt. & So., 1047 Railway Exchange Bldg., St. Louis. Next annual convention, May, 1918, Houston, Tex.

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—J. Scribner, 1063 Monadnock Block, Chicago. Meetings with Association of Railway Electrical Engineers.

RAILWAY FIRE PROTECTION ASSOCIATION.—C. B. Edwards, Office of the President's Assistant, Seaboard Air Line, Norfolk, Va. Next meeting, October 2-4, 1917, St. Louis, Mo.

RAILWAY REAL ESTATE ASSOCIATION.—R. H. Morrison, Assistant Engineer, C. & O., Richmond, Va. Next convention, October, 1917, Duluth, Minn.

RAILWAY SIGNAL ASSOCIATION.—C. C. Rosenberg, Myers Bldg., Bethlehem, Pa. Next annual convention, September 18-19, 1917, Hotel Traymore, Atlantic City, N. J.

RAILWAY STOREKEEPERS' ASSOCIATION.—J. P. Murphy, N. Y. C. R. R., Box C, Collinwood, Ohio.

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—I. D. Conway, 2136 Oliver Bldg., Pittsburgh, Pa. Meetings with Master Car Builders' and Master Mechanics' Association.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, 50 Church St., New York. Meetings with Association of Railway Telegraph Superintendents.

RICHMOND RAILROAD CLUB.—F. O. Robinson, C. & O., Richmond, Va. Regular meetings, 2d Monday in month, except June, July and August.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—P. J. McAndrews, C. & N. W., Sterling, Ill. Next annual convention, September 18-21, 1917, Hotel Auditorium, Chicago.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August, St. Louis.

SALT LAKE TRANSPORTATION CLUB.—R. E. Rowland, David Keith Bldg., Salt Lake City, Utah. Regular meetings, 1st Saturday of each month, Salt Lake City.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, 3868 Park Ave., New York. Meetings with annual convention Railway Signal Association.

SOCIETY OF RAILWAY FINANCIAL OFFICERS.—L. W. Cox, N. & W., Philadelphia, Pa. Next annual convention, October 16-18, St. Louis, Mo.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwich, A. & W. P. R. R., Atlanta, Ga.

SOUTHERN & SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, Grant Bldg., Atlanta, Ga. Regular meetings, 3d Thursday, January, March, May, July, September, November, 10 a. m., Piedmont Hotel, Atlanta.

TRACK SUPPLY ASSOCIATION.—W. C. Kidd, Ramapo Iron Works, Hillburn, N. Y. Meetings with Roadmasters' and Maintenance of Way Association.

TRAFFIC CLUB OF CHICAGO.—W. H. Wharton, La Salle Hotel, Chicago.

TRAIN DESPATCHERS' ASSOCIATION OF AMERICA.—J. F. Mackie, 7122 Stewart Ave., Chicago. Next annual convention, June 18, 1918, Grand Rapids, Mich.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, N. Y. C. R. R., Cleveland, Ohio. Next convention, to have been held September, 1917, Chicago, indefinitely postponed.

WESTERN ASSOCIATION OF SHORT LINE RAILROADS.—Clarence M. Oddie, Mills Bldg., San Francisco.

WESTERN CANADA RAILWAY CLUB.—L. Kon, Immigration Agent, Grand Trunk Pacific, Winnipeg, Man. Regular meetings, 2d Monday, except June, July and August, Winnipeg.

WESTERN RAILWAY CLUB.—J. W. Taylor, 1112 Karpen Bldg., Chicago. Regular meetings, 3d Monday in month, except June, July and August, Hotel Sherman, Chicago.

WESTERN SOCIETY OF ENGINEERS.—Edgar S. Nethercut, Acting Secretary, 1735 Monadnock Block, Chicago, Ill. Regular meeting, first Monday in month, except January, July and August. Extra meetings generally on other Monday evenings except in July and August.

Traffic News

The Railroads' War Board has notified the war council of the Red Cross that Red Cross shipments to the seaboard for transportation abroad or elsewhere, will be exempted from any embargoes and will practically be given the right of way over everything except government freight.

The railroads have withdrawn their application to the State Public Utilities Commission of Illinois for a reduction of free time in the loading and unloading of open-top cars from 48 hours to 24 hours, and for the elimination of free time in connection with the reconsignment of open-top cars.

The Public Utilities Commission of Ohio recently announced that tariffs filed by the railroads of the state providing for a horizontal increase in coal and coke rates of 15 cents a ton would become effective on September 1, without affirmative action by the commission. The tariffs were suspended twice pending hearings before the commission.

Better housing conditions for potatoes will be the topic to be discussed in the next campaign of the Lehigh Valley Railroad's agricultural department. The railroad sent a "Potato Special" through its territory last spring, demonstrating modern methods of planting and spraying, and now the most improved methods for building pits and cold storage houses installed in a car which will be used for demonstration purposes. There will be lectures on the new Federal standards for grading potatoes and the new arrangements by which farmers can borrow money on their stored potatoes. To accomplish maximum loading of cars and at the same time prevent a great spoilage through congestion at the terminal markets, Mr. Stevens, the road's agriculturist, is urging better storage facilities on the farms. Mr. Hoover has approved the plan. An itinerary for the car is now being arranged.

F. P. DeHoyos, general agent of the Mexican Railway, 233 Broadway, New York City, advises that sleeping cars are now running regularly between Mexico City and Vera Cruz, and he declares untrue the recent report that the sleeping cars of this road have been scattered all over Mexico by the military authorities. The through night trains, No. 5 and No. 6, are not now in operation, because of scarcity of locomotives and the sleeping cars are run on trains No. 1 and No. 2. These trains run through in 14 hours 30 minutes. Mr. DeHoyos is general agent also for the Constitutionalist Railways, operating the National Railways (as well as for the Tehuantepec National Railway); and he says that arrangements have been completed and shortly will be put in effect for the resumption of regular Pullman sleeping car service between San Antonio, Texas, and the City of Mexico.

The passenger department of the Canadian Pacific announces that bona fide tourists who are citizens of the United States or allied or neutral countries do not require passports to enter or permits to leave Canada and are assured courteous treatment and a hearty welcome. Persons born in an enemy country, however, who claim to have been naturalized in the United States, should carry naturalization papers and those of evident enemy origin who claim to have been born in the United States or in some other allied or neutral country should carry birth certificates or some other evidence of their birthplace. To facilitate departure from Canada, males between 18 and 45 years of age entering Canada for temporary purposes may secure, on application to the Canadian immigration officer where they enter, a card showing that they are not residents of Canada. Women and children do not require any identification card.

Telegraphic Reports of All Accidents

The Public Utilities Commissioners of Colorado, George T. Bradley, M. H. Aylesworth and A. P. Anderson, have issued an order concerning notification of accidents, as follows:

"It is ordered, that when any wreck, or any collision of trains, or any collision of trains with vehicles or pedestrians, resulting in loss of life or injury to persons, occurs upon any line, . . . either steam or electric, the superior officer, agent or employee

of the carrier on the ground at the time of the accident shall immediately notify the Public Utilities Commission, Denver, by telegram, the details of such accident, stating the immediate location, the nature and cause of the accident, and the number of persons killed or injured. . . . Disobedience . . . punishable by fine of $1,000, or by imprisonment for one year, or both. . . ."

Production of Bituminous Coal

According to the weekly report on the production of bituminous coal and the causes of loss of working time, compiled by the Geological Survey, Department of the Interior, the ratio of tonnage produced to full-time output continued to decline during the week ended August 11. Mines representing more than one-third of the output of the country produced 71.8 per cent of their combined full-time capacity as limited by the present labor force. The index not only fell below the level of the preceding week (73.0), but reached the lowest point attained since June 1, when the system of weekly reports was begun. Iowa, Illinois, Ohio, Kansas and Missouri declined; Alabama, southwestern Virginia and western Pennsylvania held their own, while eastern Kentucky and Tennessee recovered to some extent from the depression of the week before.

Orders Heavier Loading of Cotton

The Commission on Car Service has issued instructions prohibiting the shipping of cotton in quantities less than 65 bales in a car and requiring as many more to be loaded as the size of the car furnished will permit. Notice to this effect has just been sent to buyers of cotton, together with a request that they place orders for their requirements on a basis of not less than 65 bales or multiples thereof. In the Southwest and Mississippi delta districts, the average car will load 65 bales, and in the Southeast the average car will load 75 bales. Consequently buyers are asked to order in multiples of 65 from the Southwest and in multiples of 75 from the Southeast districts.

"The New England territory will be taxed to the maximum capacity of facilities this fall," says the notice, "and the acceptance of freight by the railroads serving the territory north of the Ohio and Potomac rivers will have to be carefully regulated."

Clifford Thorne Organizes Shippers' Association

At a meeting in Chicago, August 31, of members of the National Shippers' Conference, which was formed last spring to oppose the proposed 15 per cent increase in freight rates, a permanent organization of shippers and shippers' associations was effected. The new association will be known as the National Federation of Shippers, and proposes to protect the interests of its members in rate cases before the Interstate Commerce Commission and state commissions. A resolution was passed authorizing the appointment of a committee to present a protest to the Interstate Commerce Commission against the increases in commodity rates on grain, livestock, oil and lumber proposed by the carriers in Official Classification territory. Among the reasons given for the opposition of the association to these advances is that they will increase the cost of living during the duration of the war and increase the cost of the war to the Government. If the railroads persist in asking increased rates it is the purpose of the federation to recommend that the Act to Regulate Commerce be amended so as to provide that no rates shall be advanced except after all shippers concerned have been notified and have been given opportunity to secure a full hearing.

Among those who took a prominent part in the meeting were Clifford Thorne, formerly chairman of the Railroad Commission of Iowa; Luther M. Walter, a Chicago attorney specializing in interstate commerce cases; and Judge S. H. Cowan, of the Texas Industrial Traffic League and other Texas shipping organizations. Among the associations who had representatives at the meeting were the National Live Stock Shippers' Protective League, the National Petroleum Association, the National Council of Farmers' Co-operative Grain Dealers, the National Lumber Manufacturers' Association, the Western Oil Jobbers' Association, the Western Petroleum Refineries Association, the Natural Ice Association of America and the National Lime Manufacturers' Association.

Commission and Court News

INTERSTATE COMMERCE COMMISSION

The Interstate Commerce Commission has made public a tentative report by Attorney-Examiner G. N. Brown, recommending a finding that carriers have not justified their proposal to reduce free time on export freight from 10 to 5 days at gulf ports and from 15 to 5 days at North Atlantic ports. The report recommends that the carriers be allowed to make effective their proposed reduction from 10 to 5 days on bunker coal at New Orleans, Mobile and Pensacola. Attorney-Examiner La Rue, in a tentative report on the New York harbor storage case, recommends a finding that the carriers have shown that it will be reasonable for them to reduce from 5 days to 2 days the free time allowed for holding freight at railroad terminals consigned to the New York lighterage district. He also recommends that the proposed increased storage charges on both export and domestic freight be allowed to become effective. Arguments on these reports will be heard by the commission on October 4.

Southern Pacific May Retain Interest in Direct Navigation Company

Opinion by Commissioner Meyer:

The commission finds that the Southern Pacific and Morgan's Louisiana & Texas may continue to operate or have an interest in the Direct Navigation Company, owning three tugs, six barges, wharves at Houston, etc., and operating on Buffalo Bayou between Houston and Galveston. (46 I. C. C., 378.)

Rates to Iowa Points

Board of Railroad Commissioners of the State of Iowa v. Ann Arbor et al. Opinion by Commissioner Harlan:

This proceeding in a sense is supplementary to the Mississippi River Case, 28 I. C. C., 47, and 29 I. C. C., 530; it also is closely related to the Interior Iowa Cities Case, 28 I. C. C., 64, and 29 I. C. C., 536, which was reopened on petitions for rehearing, and is now pending before the commission. In the case first cited the class-rate adjustment between the territory east of the Indiana-Illinois state line and the cities in the state of Iowa on the Mississippi river was brought in issue. That same adjustment, to the extent that it affected the construction of through rates to and from the interior Iowa cities, also was dealt with in the case last cited. In respect of traffic to and from the central freight association territory the commission is asked, in the complaint here before it, to place the Iowa cities, located on the Mississippi river, upon a rate parity with St. Louis, Mo.

The commission holds that:

From points in central freight association territory, west of the Pittsburgh-Buffalo line and east of the Indiana-Illinois state line, there should be no difference in the rates to the upper group cities in Iowa on the Mississippi river and to St. Louis, when the distances to the upper group cities are equal to or less than the distances to St. Louis; but for each 25 miles or fraction thereof that the distances to the upper group cities exceed the distances to St. Louis, rates to the upper group cities may exceed the rates to St. Louis by one cent on the first two classes and one-half cent on the remaining four classes.

From Pittsburgh, Buffalo and points taking the same rates, to cities on the west bank of the Mississippi river from and including Dubuque on the north to and including St. Louis on the south, the class rates shall not exceed 64½ per cent of the rates contemporaneously maintained between New York City and St. Louis.

The basis herein found proper will apply both eastbound and westbound, and the carriers will be expected to adjust their commodity rates in conformity therewith. (46 I. C. C., 20.)

Interior Iowa Cases. Opinion by Commissioner Harlan:

The Mississippi-Missouri river proportional class scale, whatever its measure may be, shall for the future be equitably prorated across the state of Iowa in constructing reasonable maxi-

mum proportional class rates between the west bank of the Mississippi river and interior Iowa cities on traffic originating at or destined to points in official classification territory east of the Indiana-Illinois state line.

Upon that basis reasonable maximum class rates are herein prescribed, and it is expected that the carriers will adjust their commodity rates in conformity therewith.

This is the second supplemental report in this case. "In the original report," says the opinion, "we announced that the carriers would be expected to propose a system of single proportional rates, applicable west of the Mississippi river on through traffic moving in both directions, that would bear a reasonable relation to the Mississippi-Missouri river proportional scale of 55 cents; and although the proportional rates subsequently established had our approval, it becomes apparent that the interior Iowa cities were not given the relief which this broader record shows they are entitled to have. It is also clear that the rate changes since made have unquestionably enlarged the disadvantages of which the interior Iowa cities complained in the original proceeding." (46 I. C. C., 39.)

Board of Railroad Commissioners of the State of Iowa v. Atchison, Topeka & Santa Fe. Opinion by Commissioner McChord:

Ocean-and-rail and rail-lake-and-rail class rates from upper Mississippi river cities, Dubuque, Iowa, to Keokuk, Iowa, inclusive, to points in trunk line territory found to be unduly discriminatory and prejudicial when compared with corresponding rates from the lower Mississippi river cities, Quincy, Ill., to St. Louis, Mo., inclusive, to the same points.

STATE COMMISSIONS

The New York State Public Service Commission, First district, as a result of a shutdown in the service of the Interborough subway for several hours on the afternoon of Saturday, August 25, delaying many thousands of passengers, has issued an order directing the Interborough Rapid Transit Company to maintain a coal supply in the bunkers of its subway power station sufficient to operate the subway for several days. The shutdown was due to failure of the coal supply. The company is required to report to the commission whenever the reserve supply of coal falls below 2,500 tons. The commission has also issued orders to its own inspectors to see that the order is lived up to, and is also making observations of other public utility companies, with the view of seeing that they have a sufficient coal supply to provide a continuous and regular service.

PERSONNEL OF COMMISSIONS

Edgar J. Watkins, attorney-examiner of the Interstate Commerce Commission, has resigned to engage in private practice.

COURT NEWS

Permits to Ship Liquor

The Supreme Court of the State of Washington holds that since the Webb-Kenyon Law divests interstate shipments of liquor of their character as interstate shipments, the statute of 1915, requiring a permit, applies to a shipment originating in Kentucky consigned to Washington, and on failure to secure a permit the liquors are liable to seizure.—State v. Great Northern (Wash.), 165 Pac., 1073. Decided June 22, 1917.

Damages for Delay of Fire Engine at Crossing—Nonsuit

In an action against a railroad for damages for injury in consequence of its obstruction of a grade crossing by its trains so as to delay a fire engine in reaching the plaintiff's burning building, it did not appear that those in charge of the train knew or ought to have known of the fire when they were using or about to use the crossing, or that until the gates were raised, it was reasonably practicable for the railroad to have cleared the crossing and enabled the engine sooner to reach the fire. The Pennsylvania Supreme Court held that a compulsory non-suit was properly ordered.—Kirstein v. Philadelphia & Reading (Pa.), 101 Atl., 338. Decided March 19, 1917.

Equipment and Supplies

LOCOMOTIVES

SOUTHERN PACIFIC.—According to an announcement by Wm. Sproule, president of the Southern Pacific, 65 new locomotives, costing over $2,500,000 are on order for the Pacific System Lines. Ten of the locomotives are to be built at the company's shops. This latest order brings the total expenditures for new equipment by the Southern Pacific and the Pacific Fruit Express, of which it is half owner, to $24,500,000.

"This great building program," said Mr. Sproule, "is evidence of what the Southern Pacific is doing to make its facilities equal to the unusual demand for equipment occasioned by the war situation and general business expansion. The total number of freight cars we have had built this year or are having built, reaches almost 10,000, and comprises 300 box cars, 1,000 flat cars, 900 stock cars, 600 oil cars, 1,000 automobile cars, 400 gondolas, 40 narrow-gage flat cars, 50 cabooses, and 2,700 modern refrigerator cars for the Pacific Fruit Express. One thousand of the P. F. E. refrigerators, as well as 10 locomotives are to be built on the coast. There have already been delivered to us under this program 3,450 freight cars, and five mail and baggage cars. The refrigerator cars will begin to arrive about September 1. We have now building in the East 300 oil tank cars, 11 locomotives, and 20 baggage and mail cars. We are about to start on the construction of the 3,240 freight cars announced some time ago, and this work will be done at home. It is very difficult during these times to make any predictions as to when equipment can be delivered, because the orders of our government and the government of the allies for cars and locomotives are being given preference. We are making this expenditure responsive to the needs of the present emergency, although the prices of labor and material are the highest in the history of the world."

FREIGHT CARS

THE SEABOARD AIR LINE is in the market for 500 flat cars.

THE SOUTHERN RAILWAY is asking prices on about 400 freight cars.

THE VIRGINIAN RAILWAY is reported as about to place orders for 1,000 55-ton steel hopper cars.

RUSSIAN GOVERNMENT.—The Canadian Car & Foundry Company is negotiating with the Russian authorities for a large portion of the big Russian order which will shortly be distributed to the Canadian companies, totalling, as was noted in the *Railway Age Gazette* of August 10, 10,000 four-wheel cars.

THE UNITED STATES GOVERNMENT has placed additional orders for 500 small push cars with the Pressed Steel Car Company and 500 convertible ballast cars with the American Car and Foundry Company. The Government authorities are also reported as about to place additional orders for cars. It is understood that orders for 10,000 or more cars are in contemplation.

SIGNALING

THE TEXAS & NEW ORLEANS has ordered from the General Railway Signal Company a 4-lever interlocking, to be installed at Connell, Tex.

THE LEHIGH VALLEY has ordered from the General Railway Signal Company a 6-lever interlocking for installation at Bridge 386.

THE YAZOO & MISSISSIPPI VALLEY is to install an 8-lever interlocking at New Basin Canal, New Orleans. The material is from the General Railway Signal Company.

THE ALABAMA GREAT SOUTHERN is to install automatic block signals between Russell, Miss., and Toomsuba, 24 Model 2A, one arm, 10 volt, top-of-mast signals. The material will be furnished by the General Railway Signal Company.

Supply Trade News

L. L. Holmes, formerly purchasing agent of the Cincinnati, Indianapolis & Western at Indianapolis, Ind., has been appointed railroad representative of the Barrett Company, New York, with headquarters at Boston, Mass.

The Acar Manufacturing Company, 30 Church street, New York, has opened a Chicago office, in charge of Leland T. Johnson at room 649, McCormick building. Mr. Johnson will handle matters for this company in the western territory.

E. F. Carry, president of the Haskell & Barker Car Company, has been appointed as a representative of the Emergency Fleet Corporation, United States Shipping Board, on a labor adjustment board to adjust labor and wage disputes in connection with the building of ships for the Government.

A. E. Heffelfinger, who for more than two years past has been chief draftsman of the National Steel Car Company, Ltd., Hamilton, Ont., has recently been appointed chief engineer of that company. Mr. Heffelfinger was born April 10, 1881, at Reading, Pa. Following his graduation from the Williamson Free School of Mechanical Trades in 1900 he entered railroad service as a special apprentice in the car shops of the Philadelphia & Reading, at Reading, Pa. On the completion of his apprenticeship he served at different times as draftsman, designer, checker, estimator, computer and principal assistant engineer with the Harlan & Hollingsworth Corporation, the Pressed Steel Car Company and the American Car & Foundry Company. He was with the latter company for over eight years, during which time his headquarters were in its New York office. Mr. Heffelfinger has had a wide experience in handling engineering problems in connection with the manufacture of railroad equipment for export, and he served as engineer to the Cuban representative of the American Car & Foundry Company in 1912 and 1913.

A. E. Heffelfinger

W. K. Palmer, president of the W. K. Palmer Company, Engineers, Kansas City, Mo., has received a commission as major in the engineers' corps of the United States Army. In consequence his practice and the business of the W. K. Palmer Company will be discontinued after September 1, for the period of the war.

The McCarthy Drill & Tool Corporation of Toledo, Ohio, with executive offices at 30 Church street, New York, has purchased the Toledo Drill & Tool Company of Toledo, which has just moved into a new and enlarged fireproof two-story structure, where it has arranged to turn out large quantities of high-speed drills, in addition to a full line of cutters and reamers.

The Titanium Alloy Manufacturing Company announces that the constantly increasing demand for superior bronze and brass castings has compelled it to enlarge its bronze department and make a distinct unit of it under the name of the Titanium Bronze Company, Inc. The company's works are at Niagara Falls, N. Y.; its sales offices at Buffalo, and its general offices at 165 Broadway, New York.

Frank W. Davis, manager of railroad sales of the Lake Erie Iron Company, Cleveland, Ohio, died very suddenly of heart disease at the Royal Muskoka hotel, Muskoka, Canada, August 8. Mr. Davis was born in Cleveland, January 1, 1857. He received his education in the Cleveland public schools and Oberlin, and commenced his business career with Bingham & Phelps, who at that time conducted a retail hardware business on Ontario street. He afterward engaged as a commercial traveler, and while on one of his trips he became acquainted with C. W. Scofield, secretary and treasurer of the Lake Erie Iron Company, who eventually employed him as a salesman for that company. He remained in the service of the Lake Erie Iron Company for 27 years.

F. P. Huntley

F. P. Huntley, whose resignation from his position as vice-president and general manager of the Gould Coupler Company and vice-president of the Gould Storage Battery Company has recently been announced in these columns, leaves after having completed 28 years of continuous service with these interests. Mr. Huntley began his business career in 1888 when he became a stenographer to the superintendent of motive power of the New York, Lake Erie & Western (now part of the Erie) but very shortly afterwards he left to become associated with the Gould interests as a bookkeeper and stenographer in the Gould Steam Forge, which completed an axle plant at Buffalo, N. Y., early in 1889.

F. P. Huntley

It is interesting to know that 21 years later (in 1909) Mr. Huntley introduced the first quick-acting hydraulic press used in this country in this same forge plant, then located at Depew, N. Y.

The Gould Coupler Company started in business in 1889, but its manufacturing was done for some years under contract by outside plants. In 1892 the main office of the company was moved to New York City, and the malleable iron plant was built at Depew, N. Y. Mr. Huntley was made secretary and director of the Gould Coupler Company in 1892, this company having previously absorbed the Gould Steam Forge. Seven years later, in 1900, when the Gould Storage Battery Company was formed, he was elected also vice-president and a director of that company, holding that position continuously thereafter.

In 1903 the plant for the manufacture of larger steel castings was erected at Depew, in which bolsters, couplers, side frames, and miscellaneous railroad castings were made. Both the erection of this plant and its operation afterwards was under the direct charge of Mr. Huntley.

In 1905 Mr. Huntley resigned as secretary of the Coupler Company and was elected vice-president, general manager, and a director which position he now relinquishes. Mr. Huntley, still a young man, has had the opportunity of seeing and studying from their inception, the most of the modern devices now used in railroad service in this country, and to a certain extent abroad. It is quite probable he will continue to be identified with the railway supply industry, although he has as yet announced no plans.

TRADE PUBLICATIONS

THOR DRILLS.—The Independent Pneumatic Tool Company, Chicago, Ill., has issued a folder illustrating the various types of piston air drills, pneumatic hammers and electric drills manufactured by that company. A table is also included giving the detailed characteristics and suitable service for each type of equipment.

NO TRANSPORTATION FOR BRITISH SOLDIERS.—The parliamentary secretary to the British war office stated recently that it was considered that soldiers stationed in Great Britain should not, as a rule, be granted leave, other than draft leave, if it involves traveling by train.

Railway Construction

APACHE RAILWAY COMPANY.—This company is completing surveys for a line from Holbrook, Ariz., to White River, by way of Snowflake, Shumway, Lakeside & Pinetop, a total distance of about 71 miles. The work involves about 13,000 cu. yd. of grading per mile. The road will have a maximum grade of 1½ per cent and a curvature of 6 deg. The line will top the White Mauntain timber belt and the Apache Indian Reservation. Grading work will be started in about 30 days, and it is expected that the road will be opened for operation in about a year.

ILLINOIS CENTRAL.—This company has called for bids for the construction of a four-track, concrete bridge at Kankakee, Ill. The structure will be approximately 570 ft. long and will have six arches, five of which will be 90 ft. long and the other one 60 ft.

This company has also awarded a contract to T. S. Leake & Co., Chicago, for the enlarging of storehouses and roundhouse stalls at Clinton, Ky. The improvements involve the shifting of some tracks and a total expenditure of about $100,000.

INDIANA HARBOR BELT.—This company has completed plans for the rebuilding of the l.c.l. transfer station at Gibson, Ind., which was recently destroyed by fire. The cost of the building will be approximately $75,000, and the work will be completed about October 1.

NEW YORK CENTRAL.—A contract has been given to the Eastern Concrete Steel Company, Buffalo, N. Y., for the construction of a building two stories high, 60 ft. by 500 ft., to be used by the American Express Company as a transfer station, for the consolidation of car shipments and for local service, with offices on the second floor. The building is located at Curtis street, Buffalo, and will be of reinforced concrete construction, including platforms and canopies.

NORTHERN PACIFIC.—This company has awarded a contract to the E. J. Rounds Construction Company, Seattle, Wash., for the construction of a depot at American Lake. The building will be 300 ft. long, 30 ft. wide and one story high, with concrete foundation and frame construction, and will cost approximately $12,000. The road has also completed a reclamation plant at South Tacoma at a cost of about $60,000. The plant includes two scrap platforms, each 50 x 600 ft., and three working sheds, 50 ft. by 100 ft. each. The sheds are equipped with rolls for smaller sizes of round and square bars and machines for the manufacture of bolts, etc., from scrap material.

PACIFIC ELECTRIC.—This company has completed plans for the construction of 12 one and two story buildings of steel and concrete construction, at Torrance, Cal. The total cost of the project will approximate $1,200,000.

TEXAS ELECTRIC.—This company is constructing two single-track extensions from Waco, Tex., to Camp McArthur, about five miles. The cost of the work will be approximately $60,000, and the company expects to have the line completed by September 15.

UNION PACIFIC.—This company is building approximately 13 miles of side tracks and running tracks to reach various points on the military reservation at Ft. Riley, Kan. Other improvements including considerable yardage at Junction City have been authorized. Details of these improvements will be announced later.

WISCONSIN INTERURBAN.—This company has awarded a contract to J. T. Adams, Columbus, Ohio, for the construction of a line from Madison, Wis., to Janesville, a distance of 40 miles. The road will have a maximum grade of 1½ per cent and maximum curvature of 6 deg. The work will involve about 15,000 cu. yd. of grading per mile, and the construction of several pile bridges, sub-stations, car barns, freight and passenger stations. In addition to the Janesville branch the company is planning the construction of a line from Madison to Fond du Lac, and another from Madison to Prairie Du Sac and Portage. The aggregate mileage of the three lines will be about 207 miles.

Railway Financial News

MISSOURI, KANSAS & TEXAS.—An application for the appointment of an additional receiver to act with Charles E. Schaff, now the sole receiver, was filed August 30 in the U. S. District Court at St. Louis by Speyer & Co., of New York. A hearing on the petition will be held before Judge William C. Hook in New York City on September 7. Speyer & Co. filed the petition as holders of $7,000,000 of two-year notes and a portion of the general mortgage bonds and of part of the first refunding fours. The fixed charges and sinking fund charges now aggregate $7,000,000 a year. It is stated that the reorganization plan of Hallgarten & Co. and J. & W. Seligman & Co., New York bankers, cut the fixed charges to $3,800,000, while Speyer & Co. maintained that the fixed charges could be safely fixed at about $4,500,000, in which case they would still amount to only 62¼ per cent of the average net earnings for the years from 1911 to 1915. The bankers further state that the fixed charges of $4,500,000 are justified by the past and present earnings capacity of the system, especially in view of the new money which is to be raised through the reorganization. Differences of opinion, the petition states, have arisen between the present receiver and the holders of the two-year notes and general mortgage bonds as to a number of questions of policy, such as prompt payment of the interest on $40,000,000 of 4 per cent first mortgage and other underlying bonds. In view of these differences and of the fact that the interests of the junior security holders differ from the interests of prior lien holders, the petitioners claim that the junior security holders are entitled to a direct representation in the management of the road, "especially in view of the fact that the receiver has shown himself to be a partisan of the proposed plan, which favors the holders of prior liens." They also state that the receiver in a discussion upon the merits of a plan of reorganization should not aline himself with one set of security holders against another.

NEW YORK CENTRAL.—Application has been made to the New York Public Service Commission, Second district, for permission to issue $10,000,000 Series A of refunding and improvement 4½ per cent bonds; and to issue and sell $15,000,000 of its promissory notes, bearing interest at a rate not to exceed 5 per cent per annum. As security for the payment of these notes the company purposes to pledge the $10,000,000 of Series A bonds, and also $10,000,000 additional bonds, the issue of which was authorized by the commission on April 26, 1917. The proceeds of the sale of the notes are to be used for the following purposes: $5,500,000 for additions and betterments, and $9,500,000 for the discharge of outstanding obligations.

NEW YORK, NEW HAVEN & HARTFORD.—In answer to the $165,000,000 restitution suit instituted in the Federal District Court at New York on August 30, 1916, by five stockholders, J. Pierpont Morgan, Herbert L Satterlee, William P. Hamilton and Lewis Cass Ledyard as executors of the will of the late J. Pierpont Morgan, and William Rockefeller, Charles M. Pratt, and Mr. Ledyard as individual defendants have denied the charge in the complaint that the New Haven company or any of its subsidiary companies ever acquired any control of the Boston & Albany or the Metropolitan or Eastern Steamship companies. Continuing the answer, Mr. Rockefeller explained that prior to June 30, 1915, the then board of directors of the defendant company advised with counsel concerning the acts of former directors and whether an action for restitution should be begun against them. He said that it was decided not to begin such an action because the litigation was sure to be very expensive, complicated, and would probably be barren of any good result. This action, it was said, was thereafter indorsed by a vote representing 950,000 shares of stock out of a total of 1,571,000. Asa P. French, on behalf of the defendants, presented a resolution calling upon the directors to bring a suit for restitution, and this was defeated, Mr. Rockefeller said, by persons owning 925,124 shares of stock. Then the directors whose action had been indorsed by the stockholders, were re-elected. For these reasons the defendants ask that the suit be dismissed.

Railway Officers

Executive, Financial, Legal and Accounting

F. W. Schanck has been appointed auditor of the Georgia Coast & Piedmont, with office at Brunswick, Ga., vice R. E. Anderson.

Archibald G. Loomis who has been elected treasurer of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, succeeding F. G. Ranney, retired, was born at Hartford, Conn., on June 20, 1848. He began his business career as a clerk in a bank at Hartford and later served successively as discount clerk, teller, cashier, director and president. In 1899 he was elected vice-president of the National City Bank of New York, which position he held until 1906, when he was elected vice-president of the Union Trust Company at Providence, R. I. In the following year the bank was placed in the hands of the receiver and Mr. Loomis was given direct charge of its affairs. Several years later the bank was taken out of the receiver's hands and Mr. Loomis remained a vice-president until 1915, when he resigned.

A. G. Loomis

Clinton L. Bardo, general manager of the New York, New Haven & Hartford, has been appointed assistant to president. He will continue in general charge of the operating department, with headquarters at New Haven, as now. He was born on October 24, 1867, and began railway work in May, 1885, as a telegraph operator on the Philadelphia & Erie division of the Pennsylvania Railroad. He was in the service of the Pennsylvania about a year, and then worked for brief periods for the Philadelphia & Reading and the Tidewater Oil Company. In October, 1887, he went to the Lehigh Valley as telegraph operator, and was soon promoted to train despatcher. In 1892 he was assistant trainmaster, then trainmaster, and in 1901 was promoted to trainmaster of the New York division. In October, 1904, Mr. Bardo went to the New York, New Haven & Hartford as freight trainmaster at Harlem River, N. Y.; and he was made assistant superintendent of the division in 1905. In 1907 he was appointed superintendent of the Grand Central Terminal, New York City, and superintendent of the Electric division of the New York Central. He resigned this position in March, 1911, and returned to the Lehigh Valley as assistant to the general manager; but two years later, February 15, 1913, he resigned from the Lehigh Valley and was appointed general manager of the New Haven, which position he held until his appointment last week, as assistant to the president of the same road, as above noted.

C. L. Bardo

J. F. Maguire, former general manager of the Lehigh Valley, has been appointed assistant to vice-president in charge of operation, with headquarters at New York.

George C. Jones, vice-president of the Central Vermont at St. Albans, Vt., has been appointed assistant to president of the Grand Trunk with headquarters at Toronto, Ont.

W. D. Robb has been appointed vice-president of the Grand Trunk, in charge of motive power, car equipment and machinery, with headquarters at Montreal, Que. Mr. Robb was born at Longueuille, Que., on September 23, 1857. He received his early education in Sherbrooke Academy and St. Francis College, Richmond, Que., entering the service of the Grand Trunk Railway System as an apprentice at Hadlow Cove, July 1, 1871. In 1873 he was transferred to Montreal, where he finished his apprenticeship as a machinist. In February, 1883, he was appointed night foreman at Point St. Charles shops, and in August of the same year he was promoted to the position of foreman at Belleville in charge of the motive power and car department. He became master mechanic of the Middle division, with headquarters at London, Ont., in January, 1897, and was appointed acting superintendent of motive power at Montreal in July, 1901. In May, 1902, he received his appointment as superintendent of motive power, which position he has since occupied continuously until his recent appointment as vice-president.

W. D. Robb

U. E. Gillen, general superintendent of the western lines of the Grand Trunk, at Chicago, Ill., has been appointed vice-president in charge of operation with headquarters at Montreal, Que. Mr. Gillen was born on February 27, 1867, at Brooklyn, Mo., and was educated in the public and private schools. He entered the service of the Chicago, Milwaukee & St. Paul in 1884, as a clerk at Canton, S. D. During the same year he learned telegraphy and served as telegraph operator and relief agent until April, 1885, when he went as telegraph operator to the Missouri Pacific, at Pacific, Mo. He was promoted in 1888 to operator in the train despatcher's office at St. Louis; in 1892 he was promoted to train despatcher and subsequently served as chief train despatcher until 1901 when he went to the Grand Trunk as trainmaster at Belleville, Ont. In 1902 he was promoted to assistant superintendent at Belleville. Two years later he was again promoted to assistant superintendent at London, Ont., and in 1907 became superintendent at Toronto. He was transferred in 1912 to Montreal as superintendent and the following year he was promoted to general superintendent at Chicago, which position he held until his recent appointment as vice-president in charge of operation of the same road, as above noted. In 1916 Mr. Gillen served as president of the Grand Trunk Railway Maintenance of Way Association and in 1917 he was elected president of the General Superintendents' Association of Chicago.

U. E. Gillen

James Russell, until recently vice-president and general manager of the Minneapolis & St. Louis, has been appointed general manager of the St. Louis Southwestern vice W. T. Tyler, who continues as first vice president of the Texas properties, both with headquarters at Tyler, Texas.

L. R. Watts, general counsel of the Seaboard Air Line, at Portsmouth, Va., has been appointed consulting counsel, and E. Marvin Underwood, assistant attorney general of the United States, of Atlanta, Ga., has been appointed general counsel, with headquarters at Norfolk, Va., to succeed Mr. Watts.

F. G. Ranney, treasurer of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, who has resigned, effective September 1, began his business career as a bookkeeper with the Western Union Telegraph Company on February 22, 1866. In September, 1874, he was promoted to secretary and treasurer, and in 1879 entered the service of the St. Paul as cashier. In 1882 he was promoted to assistant treasurer of the same road, and on February 23, 1887, became treasurer, which position he held until his retirement.

Operating

R. E. Hoard has been appointed inspector of transportation of the Delaware & Hudson, with headquarters at Albany, N. Y.

C. P. Stembel, superintendent of the Minneapolis & St. Louis, at Minneapolis, Minn., has been appointed general superintendent of the Virginian Railway, with headquarters at Norfolk, Va.

C. P. Stembel

He was born on October 3, 1868, and graduated from Shattuck Military School at Faribault, Minn., in June, 1887. He began railway work in 1889, as a clerk in the office of the ticket auditor of the Chicago Great Western, and subsequently held consecutively various positions in the auditing department. From September, 1892, to September, 1894, he was traveling accountant, then for one year was chief clerk to the general superintendent. In September, 1895, he was appointed assistant to the general manager, and from September, 1899, to July, 1900, he was superintendent of terminals at Oelwein, Iowa. He was then to March, 1905, superintendent of the Southwestern division, and then to July, 1908, was superintendent of the Eastern division, all on the Chicago Great Western. On July 1, 1908, he was appointed assistant to vice-president of the Chicago Union Transfer Railway, and the following January he was appointed superintendent of the Minneapolis & St. Louis, which position he held at the time of his recent appointment as general superintendent of the Virginian Railway.

Frederick T. Gibbs has been appointed trainmaster of the Illinois Central, with headquarters at Centralia, Ill., succeeding Donald L. Carlyle, assigned to other duties.

John L. East has been appointed superintendent of freight service of the Illinois Central, and the Yazoo & Mississippi Valley, with headquarters at Chicago, effective September 1. This is a new office created with a view to increasing the efficiency of the loss and damage bureau.

W. R. Davidson, superintendent of the Grand Trunk at Detroit, Mich., has been appointed general superintendent of the western lines, with headquarters at Chicago, succeeding U. E. Gillen, promoted; and T. King has been appointed superintendent of the Detroit division, with headquarters at Detroit, succeeding Mr. Davidson.

H. E. McGee, formerly superintendent of the Missouri, Kansas & Texas, at Greenville, Tex., and recently transportation officer of the government training camp at Waco, has been appointed superintendent of the Oklahoma district of the M. K. & T., with headquarters at Oklahoma City, Okla., succeeding S. H. Charles, granted a leave of absence; H. B. May has been appointed trainmaster of the Osage division, including the Osage terminal, with headquarters at Parsons, Kan., succeeding F. W. Grace.

James Berlingett having resigned as general manager of the Virginian Railway, the duties of that office were taken over on September 1, by E. E. Kerwin, vice-president, at Norfolk, Va. E. D. Hanes has been appointed superintendent coal terminals, Sewalls Point, Va., vice W. A. Young, resigned to accept service with another company.

George W. Wildin, mechanical superintendent of the New York, New Haven & Hartford, has been promoted to the position of general manager of that company, succeeding C. L. Bardo who has been promoted to the position of assistant to the president. Mr. Wildin has been in the service of the New Haven since July, 1907. He was born at Decatur, Ill., February 28, 1870, and graduated from the Kansas State Agricultural College with the degree of bachelor of science in June, 1892. He entered railway service shortly afterwards as a mechanical draftsman in the Topeka shops of the Atchison, Topeka & Santa Fe. He subsequently became a machinist and locomotive fireman on the Santa Fe and later an engineman on the Mexican Central. Leaving railway service he was for a while superintendent of the Aermotor Company, Chicago. He returned to railway service shortly, however, as an engineman on the Chicago & Alton and then went to the Plant System, now a part of the Atlantic Coast Line, where he served successively as a machinist, a locomotive and car inspector and as mechanical engineer. From April 1, 1901, to March 1, 1904, he was mechanical engineer of the Central of New Jersey. On March 1, 1904, he left that company to become assistant mechanical superintendent of the Erie, being promoted on April 1 of the same year to mechanical superintendent at Meadville. From January to July, 1907, he served as assistant superintendent of motive power of the Lehigh Valley and then left that road to accept a position as mechanical superintendent of the New Haven. In May, 1917, he was promoted to general mechanical superintendent, and it is this position he leaves to take up his new duties. Mr. Wildin was president of the American Railway Master Mechanics' Association in 1910.

G. W. Wildin

Traffic

P. M. Havens, commercial agent of the Cincinnati, Indianapolis & Western, with headquarters at Indianapolis, Ind., has been appointed general agent, with the same headquarters, succeeding A. M. Waldo, deceased.

R. H. MacDonald, city passenger agent of the Missouri Pacific at New York, has been appointed general agent of the passenger department, with the same headquarters, succeeding R. T. G. Matthews, granted a leave of absence.

J. W. Stevenson, traveling freight and passenger agent of the Chicago, Milwaukee & St. Paul at Bellingham, Wash., has been appointed commercial agent, with headquarters at Vancouver, B. C., succeeding A. W. Nase, who has been transferred to Bellingham, Wash.

Engineering and Rolling Stock

I. M. Brown, assistant engineer maintenance of way on the Cleveland, Cincinnati, Chicago & St. Louis at Springfield, Ohio, has been appointed acting engineer maintenance of way of the

Indianapolis terminal division, with headquarters at Indianapolis, Ind., succeeding C. F. Hinchman, granted a leave of absence.

G. O. Hammond, assistant general mechanical superintendent of the New York, New Haven & Hartford, at New Haven, Conn., has been appointed general mechanical superintendent.

H. B. Brown, general fuel inspector of the Illinois Central, at Chicago, has been appointed superintendent of the fuel department of the Lehigh Valley, with office at South Bethlehem, Pa.

W. H. Sample, master mechanic on the Grand Trunk at Montreal, Que, has been appointed superintendent of motive power, with the same headquarters; G. M. Wilson, assistant master mechanic at Montreal, has been appointed master mechanic of the Montreal shops, with the same headquarters, in place of A. A. Maver, retired.

R. W. Burnett has been appointed master car builder of the Delaware & Hudson, with office at Albany, N. Y. Mr. Burnett was born at Farmer City, Ill., in 1868, and in 1890 entered the service of the Union Pacific in the car department at Denver, Colo. In 1892 he was connected with the Pennsylvania Railroad at Chicago as a car inspector, and from August, 1892, to July, 1899, was with the Lake Shore & Michigan Southern at Chicago as a foreman and general foreman of the car department at Englewood. The early part of 1900 he spent as general foreman of the car department of the Long Island, going in the latter part of the year to the Central of New Jersey at Elizabethport, N. J., as general foreman of the car department. He remained with that road until 1904, and then went to the Erie, and served on that road in the capacities of assistant master car builder and master car builder, with headquarters at Meadville, Pa., until January, 1907. He left the service of the Erie to go with the Canadian Pacific as assistant master car builder, and in 1909 was promoted to general master car builder. In 1913 he was also elected vice-president of the Master Car Builders' Association. In November, 1915, he left the service of the Canadian Pacific and has since been vice-president of the National Car Equipment Company, Chicago.

R. W. Burnett

E. R. Battley, general foreman motive power department of the Grand Trunk at Deering, Me., has been appointed master mechanic of the eastern lines with headquarters at Montreal, Que., and A. McDonald, foreman of the erecting shop at Stratford, Ont., has been appointed assistant master mechanic, with headquarters at Montreal shops.

W. L. Bean, who has been acting as assistant to the president of the New York, New Haven & Hartford, has been appointed assistant to the general mechanical superintendent. He was born on January 3, 1878, at Stevens Points, Wis., and graduated from the University of Minnesota with the degree of mechanical engineer in 1902. The same year he began railway work with the Northern Pacific as special apprentice. In December, 1904, he went to the Atchison, Topeka & Santa Fe, serving successively as erecting shop foreman, locomotive inspector at the Baldwin Locomotive Works in Philadelphia, and machine shop foreman at La Junta, Colo. In January, 1909, he was appointed division foreman at Belen, N. M., and the following July was appointed motive power assistant at Topeka, Kan. On February 1, 1912, he became chief engineer for the Oswald Railroad Service Company, at Chicago, and on July 10, 1916, he entered the service of the New Haven, and since that time has been acting as assistant to the president.

Railway Officers in Military Service

J. de N. McComb, office engineer of the Atchison, Topeka & Santa Fe, at Chicago, has been commissioned captain in the Engineer Officers' Reserve Corps, and has been assigned to duty at Ft. Leavenworth, Kan.

J. W. Reid, bridge engineer of the Chicago & Alton at Chicago, and R. A. Cook, valuation engineer, who were commissioned captains in the Engineer Officers' Reserve Corps, have been assigned to duty at Ft. Leavenworth, Kan.

Special

J. Hampton Baumgartner, publicity representative of the Baltimore & Ohio, has resigned, effective September 1, to become assistant to the president of the National Association of Owners of Railroad Securities.

J. H. Baumgartner

He was born in Westminster, Md., in 1887, and prior to his appointment as publicity representative of the Baltimore & Ohio, was employed in the office of the vice-president. The organization with which he now becomes affiliated was founded recently at a meeting of bondholders and stockholders of the American railroads at Baltimore, Md., when steps were undertaken to insure the stability of securities, representing in the aggregate more than $17,000,000,000 of capital. The initial conference was attended by 500 financiers and individual investors. In addition to Mr. Baumgartner and S. D. Warfield, president of the association, there are five vice-presidents in different sections of the country, who make up the executive personnel of the organization. Mr. Baumgartner has been in charge of the publicity department of the Baltimore & Ohio since July, 1911, and has been identified with the various national publicity campaigns conducted by the railroads to educate the public concerning the problems facing the roads.

OBITUARY

Martin N. Todd, president of the Galt, Preston & Hespeler, and general manager of the Lake Erie & Northern, at Galt, Ont., died suddenly on August 29, at the age of 59.

P. H. Leonard, general western live stock agent of the Erie, with headquarters at Chicago, died at St. Luke's hospital, Chicago, on September 1, following an operation.

E. S. Koller, vice-president and general manager of the Colorado & Southern, with headquarters at Denver, Colo., died at his home at Denver on September 2 after a ten-day illness.

John F. Enright, superintendent of motive power and car department of the Denver & Rio Grande, died at his home in Denver, Colo., on September 4, after an illness of about one year.

Charles L. Crandall, professor emeritus at Cornell University, with which he was associated for nearly 50 years, died at his home at Ithaca, N. Y., on August 25. While active in many branches of civil engineering, he specialized in railway work and was well known among railway engineers as a teacher and as an author of several texts and handbooks treating on various railway engineering subjects, including transition curves, earthwork tables, railroad surveying and railroad construction. He was a member of the American Railway Engineering Association, taking an active part in the work, particularly that of the committee on Iron and Steel Structures. Professor Crandall was born at Bridgewater, N. Y., in July, 1850, and entered Cornell University when that institution was opened, graduating with the first regular class in 1872. After two years of engineering experience he returned to the institution and was made a member of the instructional force, with which he continued until his death, serving in turn as instructor, assistant professor, professor of railway engineering and for the last two years as professor emeritus.